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# Use of Daily Diary Methods to Investigate Associations of Religious, Spiritual, and Health Behaviors

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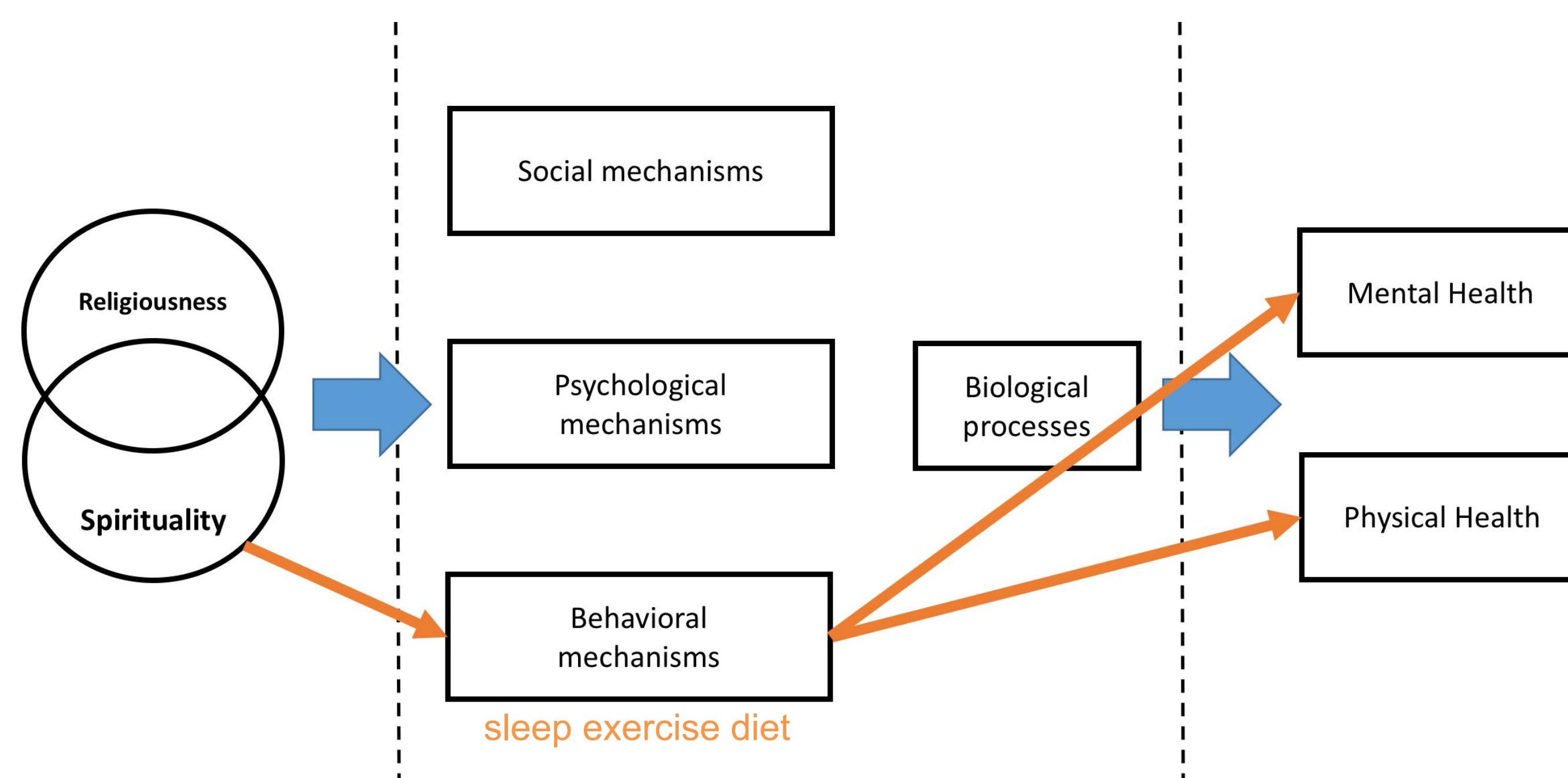


## Background

Previous research has shown that religious behaviors, spirituality, exercise and sleep are associated with better overall health outcomes. In general, religiousness and spirituality are associated with better mental and physical health. For instance, research investigating levels of religious involvement and spirituality indicated an association between high levels of spirituality and increased psychological well-being (Ivtzan, Chan, Gardner, & Prashar, 2013).

Studies have also linked religious involvement to some health behaviors. Research has shown that those identifying as religious or spiritual demonstrate better health behaviors. These include increased physical activity, healthier diet, and fewer risk-taking behaviors (Cheadle & Dunkel Schetter, 2017).

In particular, aspects of religious and spiritual behavior have been associated with healthier exercise behaviors. Church attendance has been found to be associated with increased physical activity and exercise (Nagel & Sgoutas-Emch, 2006). The same study also found that increased prayer time was significantly related to more physical activity and exercise (Nagel & Sgoutas-Emch, 2006). In a comprehensive review of 37 R/S and exercise studies, 68% showed a positive correlation between R/S and increased exercise (Koenig, 2015).



Because of concerns about participants accurately recalling daily religious, spiritual, and health behaviors, we were interested in using daily diaries to collect data. Gathering data through a daily diary method involves participants recording details about their daily experiences in fixed interval responses. Using a daily diary to collect data on behavior patterns is desirable because the level of retrospective bias is decreased from a typical survey method. In addition, daily diaries allow researchers to investigate questions that are not usually answered through the use of other research methods, such as uncovering average behavior or systemic patterns (Iida, Shrout, Laurenceau, & Bolger, 2012). We employed daily diaries to analyze religious and spiritual behaviors and health behaviors among college students. In addition, we used fitness trackers during the daily diary period to monitor sleep behavior and physical activity. These provided objective measures of health behaviors. For the present project, we focused on self-reported physical activity.



## Methods

### Participants

Seventy-six participants were recruited from a small, Christian, liberal arts college in the Midwest. More females participated (n=49) than males (n=27), and most participants were between the ages of eighteen to twenty years old (n= 70). The majority of participants, 82.9%, identified their ethnicity as not Hispanic or Latino (n= 63) and 88.2% identified their race as White (n= 67). Eighty-two percent (n=62) of participants identified with a Christian denomination whereas 14% endorsed no religious identification.

### Procedures

**Pre-Survey Visit:** Participants took an initial pre-survey to assess their normal health and sleep behaviors as well as religious and spiritual traits and demographics. Participants took this survey online in the presence of research assistants. After taking the survey, research assistants trained participants on how to complete the daily diary survey. In addition to getting trained on the survey, research assistants taught participants how to wear a fitness tracker.

**Daily Diary:** Participants completed a daily diary across two weekend days and five subsequent continuous weekdays. The participants completed the diary each morning before noon to ensure the most accurate answers. The daily diary was administered online and took ten minutes or less to complete. The diary assessed sleep patterns, health, diet, exercise and religious and spiritual behaviors, including both private and public practices, that occurred within the previous 24 hours.

### Measures:

Measures of religiousness and spirituality (including behaviors) were adapted from the Fetzer Multidimensional Measure of Religiousness/Spirituality for Use in Health Research (Fetzer/NIA, 1999). The International Physical Activity Questionnaire short form was used to calculate MET-minutes, or the minutes engaged in expending energy in comparison to resting.

## Results

Overall, participants reported being moderately religious and spiritual, engaging in about one religious or spiritual behavior and having one spiritual experience per day, and engaging in particular behaviors a few times a month to once per week.

Participants reported physical activity types and durations consistent with about 3000 MET-minutes per week which indicates that they are very active. Selected descriptive statistics are presented here:

Descriptive Statistics	Mean	
extent religious	2.28 (1.01)	moderately – slightly (1-4)
extent spiritual	2.13 (0.94)	moderately (1-4)
religious attendance	5.89 (2.61)	about once a month – 2-3 times a month
public religious activities	4.32 (2.53)	several times a year – about once a month
private prayer	5.38 (2.54)	once a week – a few times a week
read religious texts	3.88 (2.20)	once a month – a few times a month
daily spiritual experiences	2.24 – 2.45	about once in the past 24 hours
daily religious/spiritual behaviors	1.05 – 2.40	count of behaviors
baseline MET-minutes/week	2984.00	
MET-minutes/day	348.09-633.02	

As expected, all measures of spiritual and religious characteristics and behaviors, both measured at baseline and during the daily diary week, were significantly correlated; correlations ranged from .5 to .9. Similarly, for most days, baseline week and daily diary day MET-minutes were significantly correlated with correlations ranging from .25 to .7. Lastly, for many days, spiritual and religious characteristics, behaviors, and experiences correlated with baseline week and daily diary day MET-minutes with correlations ranging from .25 to .45.

Regression analyses indicated that 1) baseline religious and spiritual characteristics significantly predicted daily spiritual experiences and daily religious and spiritual behaviors, 2) baseline week MET-minutes significantly predicted daily diary day MET-minutes, 3) baseline religious and spiritual characteristics significantly predicted baseline week MET-minutes and some daily diary day MET-minutes, and 4) daily spiritual experiences and daily religious and spiritual behaviors significantly predicted some daily diary day MET-minutes. All regressions controlled for age, gender, race, ethnicity, and religious affiliation. Example regression results are presented below.

Outcome	R/S predictor	R <sup>2</sup>	β	β-age	β-female	β-Hispanic	β-White	β-affiliated
MET-minutes/week	public religious activities	.204	.319*	n.s.	.279*	.370**	n.s.	n.s.
MET-minutes on Day 4	private prayer	.241	.449**	n.s.	.289*	.347**	n.s.	n.s.
MET-minutes on Day 4	Spiritual experiences on Day 4	.255	.341**	n.s.	.272*	.366**	n.s.	n.s.
MET-minutes on Day 5	R/S behaviors on Day 5	.243	.416**	n.s.	n.s.	n.s.	n.s.	n.s.

## Discussion

Our findings support the hypothesis that religiousness and spirituality are associated with greater physical activity. This could explain observed associations of religiousness, spirituality, and health.

We are continuing to collect data for this project and look forward to validating our findings using fitness tracker data and examining physical activity as a mediator of associations of religiousness and spirituality with overall health.

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