

The Relationship Between Core Values, Religion and Spirituality, and Health

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PSY 4999: Honors Thesis

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March 22, 2023

Abstract

Individuals' values and religious beliefs can impact their behavior and mental state, and in turn, their health. Therefore, it is crucial to understand the effects of personal ideology on physical and mental health. This study seeks to fill in current literature gaps by examining the effect of the triad of values, religiosity, and spirituality on health. Data was collected using various validated measures of values, religiosity, and health from 2537 American, English-speaking respondents on Amazon Mechanical Turk. The findings from this study show that values and religiosity have a significant additive relationship with overall health, even when controlling for demographic variables. Spirituality, when looked at in relation to religiosity, cannot be used to predict health or values. This study has implications for health practitioners and policymakers, as certain interventions which target values and religiosity may be helpful in creating behavioral change. Due to the overall modest effect sizes and value interdependence, further research is needed to fully understand the underlying mechanisms and potential interventions.

Introduction

Researchers have long known that psychological well-being is directly related to both mental and physical health. For example, factors such as stress have a negative impact on one's health, functioning as a risk factor for depression (Plieger et al., 2015). Individuals' values and religious beliefs can impact behavior and mental state, and in turn, health (Hanel & Wolfradt, 2016; Koenig, 2009). By understanding what individual differences contribute to good or poor health can lead to better treatment and prevention strategies that can improve individuals' wellness.

The Relationship between Core Values and Health

The types of values people hold influence their motives and goals. Due to the effect of this triad on human behavior, certain values have a more positive relationship with health than others (Hanel & Wolfradt, 2016). For example, valuing achievement is associated with higher levels of stress due to the large amount of effort individuals need to exert in order to achieve desired outcomes. Contrarily, valuing benevolence and universalism is negatively related to stress due to the positive effects of activities such as volunteer work on well-being (Thoits & Hewitt, 2001).

Kasser and Ryan (1996) found that the main difference between a goal's relationship with health is whether it is intrinsically or extrinsically motivated. Intrinsic goals focus on internal actualization and the growth of the human condition (e.g. valuing security and creating a goal of self-acceptance), whereas extrinsic goals depend on validation from others (e.g. valuing power and creating a goal of social popularity). High importance placed on extrinsic goals has shown to be associated with higher levels of depression, general neuroticism, distress, and emotional insecurity. On the other hand, high importance placed on intrinsic goals yield a positive relationship with self-actualization and well-being. One explanation for these relationships is that extrinsic goals are generally difficult to achieve, resulting in stress and poor

psychological wellness. Additionally, extrinsic goals are often a result of feelings of insecurity or inadequacy, causing individuals to engage in behavior driven by deficiencies rather than participating in self-actualizing behavior that is promoted by adding to one's well-being.

Religiosity and Spirituality

Religiosity can be defined as having a belief in a transcendent or divine power. Most religious beliefs adhere to some form of doctrine. Despite large increases in secular beliefs in recent decades, almost 84% of the world population identifies with some form of organized religion (Hackett & McClendon, 2017).

The term spirituality was originally associated only with religion and was meant to denote extreme religious adherence or practice, particularly that of ascetics (Koenig, 2008). However, in recent decades, the term has evolved and is now generally linked with one's personal and individualized experiences with belief in a transcendent force. Spirituality is much harder to define and study as it involves less formal or organized practice. Additionally, spirituality can apply to a diverse population of people, including those who are superficially religious, completely secular, or simply searching for some form of internal tranquility or a sense of purpose and meaning in life. Due to its changing definition and increasing disassociation from organization religion, spirituality as a distinct construct has grown in popularity: in 2017, 27% of Americans defined themselves as spiritual but not religious, up from 19% in 2012. The majority of those who consider themselves spiritual but not religious identify with a religious group, yet the majority have low levels of religious adherence (Hackett & McClendon, 2017).

The Relationship Between Religiosity and Spirituality and Health

Much of the literature on religiosity and mental health supports the idea that there is a positive relationship between the two (Garssen et al., 2020). Religion provides a unique set of

characteristics which can promote positive mental health. For example, religious practice allows for a social support network through community and fellowship, combating feelings of isolation. Religion also provides believers with a sense of purpose, which in turn, increases one's ability to cope with stress. Additionally, religion can help calm anxiety through practices such as meditation and prayer (Moreira-Almeida et al., 2006; Koenig, 2009).

The research on the relationship between spirituality and health is much sparser than that on religion and health. However, existing literature on the topic have shown similar results to religiosity: spirituality has a positive relationship with health. Villani et al. (2019) investigated the relationship between spirituality and subjective well-being (SWB) in a sample of 267 Italian adults using an online questionnaire which measured participants' spirituality, religiosity, life satisfaction, and positive and negative affect. The study found that when defining spirituality as a human desire for transcendence, introspection, interconnectedness, and the quest for meaning in life, spirituality has a positive relationship with subjective well-being (SWB); SWB is an indicator for health as it correlates with mental stability. In fact, both religiosity and spirituality were associated with life satisfaction, but positive affect was more often predicted by spirituality than religiosity. Spiritual individuals have a higher perception of inner peace, reducing the experience of negative affect.

Current Project

There is a significant gap in the literature regarding the overlap between values, religiosity, and health. I am interested in how values and religiosity work in conjunction to affect health. There are two main questions this research will examine: 1) how are core values and religiosity related, and 2) how is this relationship related to health? I will first determine if there is a relationship between values and religiosity; for example, is there a correlation between certain values and religiosity? Within this examination, I would like to compare the values of

individuals of high religiosity-high spirituality levels, low religiosity-high spirituality levels, low religiosity-low spirituality levels, and high religiosity-low spirituality levels.

After identifying these relationships, I can move onto examining their overlap with health. Most of the studies looking at the relationship between values and health and religiosity and health have focused on mental health. However, I would like to take a multidimensional approach to health by also examining physical health.

I hypothesize that there is a significant relationship between religiosity and values, and this relationship can be used to predict health outcomes. Additionally, I hypothesize that certain values, such as tradition, will be more highly associated with religiosity than other values.

Method

Procedure

English-speakers across the United States were recruited to participate in this study through a notice posted on Amazon Mechanical Turk, a crowdsourcing website for employers to hire online workers to perform jobs that are unable to be fulfilled by a computer. The task for this study consisted of a self-report questionnaire related to personal values, religiosity, and health administered through REDCap. Participants were compensated \$1.50 for completing the task. The start and end times of the survey were captured and used to calculate the length of time participants spent working on the survey ($M = 9.42$ minutes, $SD = 10.30$ minutes).

Measures

Portrait Values Questionnaire (Schwartz et al., 2001).

The Portrait Values Questionnaire (PVQ) is a 40-item measure of universal values. The measure describes different “portraits” of people which reflect a value (e.g. “Having a good time is important to her”) that respondents must rate on a 6-point Likert scale from “not like me

at all” to “very much like me” (Schwartz et al. 2001). It is the most widely-used personal values measure. A total of 10 subscales scores were obtained by computing the sum of relevant items for each specific value. A meta-analysis on 58 studies conducted by Simón et al. (2017) on the uses of the PVQ in social science literature found that the PVQ shows strong cross-cultural validity as it has been administered in many different countries and in cross-cultural studies.

Intrinsic Religious Motivation Scale (Hoge, 1972).

The Intrinsic Religious Motivation Scale (IRMS) is a 10-item measure of religiosity. Respondents must rate each statement on the scale from true to not true on a 5-point Likert scale. The Intrinsic Religious Motivation Scale is one of the most widely-used scales for measuring religiosity (Hoge, 1972). This measure features 10 items which respondents must rate from true to not true on a 1 to 5 scale. It was developed as an improvement upon previous religious scales (ie., Allport-Ross Intrinsic-Extrinsic scales) in order to combat issues of questionable validity, limited applicability, and lack of clarity (Liu & Koenig, 2013). When being developed, the Hoge scale was validated by ministers, showing a high correlation ($r=0.585$) between the ministers' judgements of intrinsic religiosity and the scale's (Hoge, 1972). Since its creation, the scale has been revalidated several times (Štambuk & Konjevoda, 2007; Araújo et al., 2021). The Hoge scale is the standard for religiosity measurement not just for its validity, but also because it overcomes the limited applicability of other scales. Liu & Koenig (2013) found high reliability of an adapted version of the Hoge scale in a sample of 1039 women from rural China, showing that the scale is an appropriate measurement for religiosity for non-Christian populations.

Spirituality

Measuring spirituality is much more difficult than religiosity due to the term's loose definition and relatively recent surge in use. Subsequently, the current literature is severely

lacking in reliable and valid spirituality measures. Despite widespread agreement across healthcare disciplines that spirituality represents a distinctly broader term than religion, a meta-analysis on 10 measures of spirituality performed by Sessanna et al. (2010) found that no measure was able to successfully assess spirituality as separate from religiosity. As a result, spirituality will be assessed with a simple yes or no question asking if the participant considers themselves to be spiritual, along with a question asking if they consider themselves religious. There will be four religious-spiritual groups: people who consider themselves religious and spiritual, not religious but spiritual, not religious and not spiritual, and religious but not spiritual.

Patient-Reported Outcomes Measurement Information System (NIH).

Patient-Reported Outcomes Measurement Information System (PROMIS) is an initiative funded by the National Institute of Health which develops and validates patient reported outcomes which evaluates physical, social, and mental health for use in clinical work and research (NIH). The survey administered combined several different measures from the PROMIS item bank to assess participants' general levels of physical and mental health. This conglomeration of measures will include the Alcohol Use Short Form, 12 questions regarding alcohol use in the past 30 days; version 2.1 of the PROMIS Profile, which includes questions related to anxiety, depression, fatigue, sleep disturbance, ability to participate in social roles and activities, pain intensity, and pain interference; Emotional Support Short Form, 4 questions regarding one's perception of the emotional support around them; 10-item Perceived Stress form; Emotional Distress-- Anger Short Form, 5 questions regarding anger levels; 4-item Companionship Short Form; and the 5-item Loneliness Fixed Form. All these forms use a 5-point reversed Likert Scale, meaning a higher score indicates worse health (e.g., the max score of 60 on the Alcohol Use Short Form represents heavy drinking).

Results

Descriptive Statistics

Participants (N = 2537)

A total of 2683 individuals initially completed the survey. However, 146 participants were excluded from the final dataset due to incomplete data or extreme response bias, indicated by participants who had no standard deviation in their item ratings. Thus, the final sample consisted of 2537 participants (1577 male, 960 female). Participants ranged from ages 18 to over 75 years old ($M = 32.4$ years, $SD = 9.1$). Most of the participants identified as White only (85.1%), with Black only (4.8%), Asian only (3.8%), Native American (3.6%), Multiple Races (2.2%), and other races (0.4%) making up the rest of the sample. Participants were mainly Roman Catholics (64.5%), followed by Protestants (12.5%), then Jewish (6.2%). Other religions made up 11.2% of the sample (Muslim, Hindu, etc.), and atheists, agnostics, and non-religious individuals composed of 4.8% of participants. The male sample was significantly older, more racially diverse, and more religiously diverse than the female sample ($p < 0.001$). Tables 1-3 showcase the details of the population.

Table 1

Participant Age and Gender Characteristics

Age	Male		Female		Total		<i>p</i>
	<i>N</i>	Percent	<i>N</i>	Percent	<i>N</i>	Percent	
18-20	6	0.38%	3	0.31%	9	0.35%	0.0001
21-24	106	6.72%	79	8.23%	185	7.29%	
25-29	309	19.59%	308	32.08%	617	24.32%	
30-34	607	38.49%	146	15.21%	753	29.68%	
35-39	169	10.72%	116	12.08%	285	11.23%	
40-44	158	10.02%	98	10.21%	256	10.09%	
45-49	87	5.52%	78	8.13%	165	6.50%	
50-54	48	3.04%	49	5.10%	97	3.82%	
55-59	42	2.66%	35	3.65%	77	3.04%	
60-64	26	1.65%	28	2.92%	54	2.13%	
65-69	14	0.89%	19	1.98%	33	1.30%	
70-74	4	0.25%	1	0.10%	5	0.20%	
75 or older	1	0.06%	0	0.00%	1	0.04%	
Total	1577	100%	960	100%	2537	100%	

Table 2

Participant Race and Gender Characteristics

Race	Male		Female		Total		<i>p</i>
	<i>N</i>	Percent	<i>N</i>	Percent	<i>N</i>	Percent	
White	1290	81.80%	869	90.52%	2159	85.10%	0.0001
Black	94	5.96%	29	3.02%	123	4.85%	
Asian	74	4.69%	22	2.29%	96	3.78%	
Native	79	5.01%	12	1.25%	91	3.59%	
Pacific Islander	1	0.06%	0	0.00%	1	0.04%	
Hispanic	7	0.44%	3	0.31%	10	0.39%	
Multiple Races	32	2.03%	25	2.60%	57	2.25%	
Total	1577	100%	960	100%	2537	100%	

Table 3

Participant Religious Affiliation and Gender Characteristics

Religious Affiliation	Male		Female		Total		<i>p</i>
	<i>N</i>	Percent	<i>N</i>	Percent	<i>N</i>	Percent	
							0.0001
Agnostic	15	1.0%	10	1.0%	25	1.0%	
Atheist	28	1.8%	9	0.9%	37	1.5%	
Protestant	198	12.6%	119	12.4%	317	12.5%	
Roman Catholic	945	59.9%	691	72.0%	1636	64.5%	
Mormon	68	4.3%	29	3.0%	97	3.8%	
Orthodox	9	0.6%	4	0.4%	13	0.5%	
Jewish	128	8.1%	30	3.1%	158	6.2%	
Muslim	46	2.9%	12	1.3%	58	2.3%	
Buddhist	20	1.3%	7	0.7%	27	1.1%	
Hindu	63	4.0%	25	2.6%	88	3.5%	
Other	14	0.9%	7	0.7%	21	0.8%	
Nothing in particular	43	2.7%	17	1.8%	60	2.4%	
Total	1577	100%	960	100%	2537	100%	

Scales

After identifying the characteristics of the population, the features of the measures used in this study were found. All measures had high internal validity, with the PVQ having an overall alpha coefficient of 0.97, and subscales ranging from 0.73 to 0.85; the IRMS had a coefficient alpha of 0.82; the alpha coefficients for each of the PROMIS health scales ranged from 0.64 to 0.96, and the overall mean was 0.86.

In addition to the collected scores of the PVQ and PROMIS measures, adjusted scores were also calculated. For the PVQ, each individual's mean score across all 40 items was

subtracted from each of their value scores. This calculation centers the scores of each of the individual's 10 values around that individual's mean, correcting for individual differences and overall scale scale-use bias (Schwartz et al., 2010).

For the PROMIS measures, the scales were split into two groups based off their Likert scale measurement: one group for scales measuring how often a symptom occurs (alcohol use, anxiety, depression, participation, companionship, stress, loneliness, and anger), and one group for scales measuring how much a symptom bothers the individual (fatigue, sleep, pain interference). The mean scores of the scales of each group were subtracted from each of their health score to correct for scale-use bias. Scores were not corrected for the IRMS because the measure does not contain subscales that can be compared to an overall score. Table 4 reports the mean scores and adjusted mean scores, Cronbach's alphas, and standard deviations and adjusted standard deviations of all the scales. It also includes frequency measurements for our four religious-spiritual groups: people who consider themselves religious and spiritual, not religious but spiritual, not religious and not spiritual, and religious but not spiritual.

Table 4

Scale Characteristics

Subscale	<i>N</i> Items	Cronbach's α	<i>M</i>	<i>SD</i>	<i>M</i> adjusted	<i>SD</i> adjusted
Portrait Values Questionnaire						
Power	3	0.78	12.87	3.08	-0.29	1.82
Achievement	4	0.82	17.45	3.83	-0.09	1.93
Tradition	4	0.77	17.38	3.70	-0.16	1.79
Hedonism	3	0.73	13.06	2.90	-0.10	1.58
Conformity	4	0.80	17.49	3.69	-0.06	1.78
Security	5	0.83	22.11	4.50	0.18	1.95
Benevolence	4	0.79	17.66	3.70	0.12	1.71
Stimulation	3	0.75	13.01	2.93	-0.15	1.54
Universalism	6	0.85	26.69	5.22	0.37	2.37
Self-Direction	4	0.77	17.72	3.54	0.17	1.79
Overall PVQ	40	0.97				
PROMIS Health Measures						
Alcohol Use	12	0.96	37.58	12.75	-0.87	6.31
Anxiety	4	0.88	12.43	4.13	-0.39	1.76
Depression	4	0.90	12.03	4.46	-0.78	2.07
Fatigue	4	0.89	12.45	4.12	-0.59	1.55
Poor Sleep	4	0.64	10.82	2.45	-2.21	2.95
Inability to Participate	4	0.88	12.93	3.99	0.11	1.85
Pain Interference	4	0.88	12.90	4.02	-0.13	1.51
Lack of Companionship	4	0.81	9.86	3.19	1.32	3.09
Stress	10	0.90	33.62	7.85	1.58	3.96
Lonely	5	0.91	15.76	5.17	-0.26	2.19
Anger	5	0.90	15.53	5.12	-0.49	2.09
Intrinsic Religious Motivation						
Overall Religiosity	10	0.82	27.10	3.82		
		<i>N</i>	Percent			
Religious & Spiritual		1822	71.8%			
Not Religious & Spiritual		138	5.4%			
Not Religious & Not Spiritual		229	9.0%			
Religious & Not Spiritual		348	13.7%			
Total		2537	100%			

Correlations

After identifying the descriptive statistics of the sample and their scores, correlations among the measures were found using their adjusted scores. Intercorrelations between value variables are represented in Table 5. The majority of the values were significantly negatively correlated with one another, the strongest being between power and universalism ($r = -0.438, p < 0.01$). The significant positive correlations with the largest effect sizes are between power and achievement ($r = 0.248, p < 0.01$).

Intercorrelations between health variables are represented in Table 6. Lack of companionship was the variable that was the most often significantly positively correlated with other poor health outcomes, minus stress ($r = -0.377, p < 0.01$). The largest significant correlation within poor health variables was between lack of companionship and loneliness ($r = 0.413, p < 0.01$). The largest significant negative correlation within poor health variables was between pain interference and fatigue ($r = -0.441, p < 0.01$).

Correlations between values and health variables are represented in Table 7. No value was significantly correlated with all the poor health outcomes, with conformity having no significant correlations. Power has the most positive correlations with poor health outcomes: it was positively correlated with alcohol use ($r = 0.177, p < 0.01$), anxiety ($r = 0.082, p < 0.01$), inability to participate in activities ($r = 0.195, p < 0.01$), pain interference ($r = 0.208, p < 0.01$), anger ($r = 0.071, p < 0.01$), and loneliness ($r = 0.04, p < 0.05$). The largest positive correlation between a value and poor health was that of power and pain interference, and the largest negative correlation was between power and lack of companionship ($r = -0.244, p < 0.01$).

Table 5

Intercorrelations of Values (adjusted scores)

	Self-Direction	Power	Universalism	Achievement	Security	Stimulation	Conformity	Tradition	Hedonism	Benevolence
Self-Direction	1.00	-.202**	.080**	-.220**	0.03	-.140**	-.191**	-.249**	-.106**	-.048*
Power	-.202**	1.00	-.438**	.248**	-.255**	.176**	-.156**	0.00	0.02	-.255**
Universalism	.080**	-.438**	1.00	-.322**	0.03	-.284**	-.103**	-.176**	-.240**	.096**
Achievement	-.220**	.248**	-.322**	1.00	-.271**	.080**	-.105**	-.103**	-0.01	-.247**
Security	0.03	-.255**	0.03	-.271**	1.00	-.247**	-.109**	-.123**	-.136**	-.041*
Stimulation	-.140**	.176**	-.284**	.080**	-.247**	1.00	-.162**	-.058**	.087**	-.209**
Conformity	-.191**	-.156**	-.103**	-.105**	-.109**	-.162**	1.00	0.03	-.143**	-.048*
Tradition	-.249**	0.00	-.176**	-.103**	-.123**	-.058**	0.03	1.00	-.144**	-.135**
Hedonism	-.106**	0.02	-.240**	-0.01	-.136**	.087**	-.143**	-.144**	1.00	-.115**
Benevolence	-.048*	-.255**	.096**	-.247**	-.041*	-.209**	-.048*	-.135**	-.115**	1.00

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 6

Intercorrelations of Health Variables (adjusted scores)

	Alcohol Use	Anxiety	Depression	Fatigue	Inability to Participate	Pain Interference	Lack of Companionship	Stress	Lonely	Anger	Poor Sleep
Alcohol Use	1.00	-.095**	-.153**	-0.02	-0.02	.159**	-.279**	-.142**	-.153**	-.137**	-.109**
Anxiety	-.095**	1.00	.161**	.243**	-.087**	-0.04	-.335**	-.311**	-.041*	-.072**	-.238**
Depression	-.153**	.161**	1.00	.339**	-.155**	-.125**	-.417**	-.416**	.064**	.061**	-.334**
Fatigue	-0.02	.243**	.339**	1.00	-.140**	-.441**	-.320**	-.261**	.171**	.169**	-.346**
Inability to Participate	-0.02	-.087**	-.155**	-.140**	1.00	.313**	-.212**	-.139**	-.098**	-.173**	-.166**
Pain Interference	.159**	-0.04	-.125**	-.441**	.313**	1.00	-.206**	-0.03	.042*	0.01	-.189**
Lack of Companionship	.279**	.335**	.417**	.320**	.212**	.206**	1.00	-.377**	.413**	.327**	-.107**
Stress	-.142**	-.311**	-.416**	-.261**	-.139**	-0.03	.377**	1.00	-.219**	-.241**	.404**
Lonely	-.153**	-.041*	.064**	.171**	-.098**	.042*	-.413**	-.219**	1.00	.192**	-.228**
Anger	-.137**	-.072**	.061**	.169**	-.173**	0.01	-.327**	-.241**	.192**	1.00	-.215**
Poor Sleep	-.096**	-0.04	-0.02	-0.03	-.143**	-.176**	-.107**	.133**	0.02	0.01	1.00

*. Correlation is significant at the 0.05 level (2 tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 7

Correlation between Health and Values (adjusted scores)

	Alcohol Use	Anxiety	Depression	Fatigue	Inability to Participate	Pain Interference	Lack of Companionship	Anger	Stress	Lonely	Poor Sleep
Self-Direction	-.165**	-.057**	-.050*	-0.023	-.093**	-.161**	.200**	-0.019	.113**	-0.026	.081**
Power	.177**	.082**	0.01	-0.036	.195**	.208**	-.244**	.071**	-.211**	.040*	-.145**
Universalism	-.148**	-.060**	-0.026	.061**	-.132**	-.189**	.204**	-.051**	.133**	-0.022	.148**
Achievement	.123**	.043*	0.006	-.082**	.042*	.145**	-.091**	0.006	-.048*	-.044*	-.068**
Security	-.120**	-.049*	0.009	.057**	-.095**	-.141**	.123**	-0.02	.081**	0.012	.077**
Stimulation	.133**	-0.008	0.011	-.047*	.073**	.120**	-.108**	0.037	-.091**	-0.006	-.074**
Conformity	0.009	0.007	0.029	0.013	0	0.031	-0.036	-0.002	-0.014	0.027	0.006
Tradition	.091**	.065**	0.035	0.004	.117**	.107**	-.165**	0.011	-.085**	0.018	-.077**
Hedonism	0.025	0.036	0.027	.045*	0.022	0.026	-.096**	.040*	-.048*	.052**	-0.018
Benevolence	-.060**	-0.037	-.042*	-0.011	-.074**	-.070**	.126**	-.049*	.112**	-.039*	0.011

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Regression

Following correlations, hierarchical linear regression analyses were completed to determine the relationship between core values, religiosity, spirituality, and health. As recommended by Schwartz et al. (2010), the unadjusted values were used as predictors in the regression model, whereas the adjusted health measures were used as the dependent variable. Table 8 showcases the regression results.

First, we determined the effect of values on religiosity. After considering demographic characteristics, gender (0=male, 1=female) was found to be predictive of health ($\beta = 0.047$, $p = 0.016$). Next, values were added into the regression model. Values were found to be a moderate predictor of religiosity ($R^2 = 0.255$, $p < 0.001$). Tradition was the strongest predictor of high religiosity ($\beta = 0.361$, $p < 0.001$), followed by power ($\beta = 0.266$, $p < 0.001$), then achievement ($\beta = 0.147$, $p < 0.001$). The strongest predictor of low religiosity was universalism ($\beta = -0.217$, $p < 0.001$), followed by hedonism ($\beta = 0.144$, $p < 0.001$). These results indicate a statistically significant relationship between values and religiosity.

Next, the relationships between values and health outcomes were determined. After considering demographic characteristics, values were found to be a significant predictor for all health outcomes, with sleep having the largest effect size ($R^2 = 0.241$, $p < 0.001$). Power was the best predictor of good sleep ($\beta = -0.19$, $p < 0.001$), meaning that those who value power tend to have fewer sleeping problems. No values were a significant predictor of poor sleep. Power was the best predictor of alcohol use ($\beta = 0.169$, $p < 0.001$), inability to participate in activities ($\beta = 0.251$, $p < 0.001$), pain interference ($\beta = 0.196$, $p < 0.001$), lack of companionship ($\beta = 0.253$, $p < 0.001$), anger ($\beta = 0.82$, $p = 0.017$). Tradition was the best predictor of anxiety ($\beta = 0.094$, $p = 0.012$). Universalism was the best predictor of fatigue ($\beta = 0.106$, $p = 0.009$). Benevolence was the best predictor of stress ($\beta = 0.133$, $p < 0.001$). Hedonism was the best predictor of loneliness

($\beta = 0.081, p = 0.017$). Conversely, self-direction was the best predictor of low alcohol use ($\beta = -0.173, p < 0.001$), low anxiety ($\beta = -0.073, p = 0.047$), low depression ($\beta = -0.081, p = 0.028$), and companionship ($\beta = -0.239, p < 0.001$). Achievement was the best predictor of low fatigue ($\beta = -0.133, p < 0.001$), and low loneliness ($\beta = -0.119, p = 0.002$). Power was the best predictor of low stress ($\beta = -0.258, p < 0.001$). Universalism was the best predictor of the ability to participate in activities ($\beta = -0.118, p = 0.003$) and low pain interference ($\beta = -0.178, p < 0.001$).

In the next step of the regression model, religiosity and spirituality were added as predictor variables. After accounting for core values, religiosity has an additive effect on our understanding of health for alcohol use ($R^2_{\Delta} = 0.008, p < 0.001$), depression ($R^2_{\Delta} = 0.012, p < 0.001$), fatigue ($R^2_{\Delta} = 0.009, p < 0.001$), participation in activities ($R^2_{\Delta} = 0.004, p < 0.046$), pain interference ($R^2_{\Delta} = 0.009, p < 0.001$), companionship ($R^2_{\Delta} = 0.006, p = 0.001$), and sleep ($R^2_{\Delta} = 0.011, p < 0.001$). Religiosity had no effect on anxiety, anger, and stress. Religiosity has a significant negative relationship with depression ($\beta = -0.113, p < 0.001$), fatigue ($\beta = -0.102, p < 0.001$), lack of companionship ($\beta = -0.085, p < 0.001$), sleep ($\beta = -0.109, p < 0.001$), and loneliness ($\beta = -0.064, p = 0.007$). Religiosity has a positive relationship with pain interference ($\beta = 0.064, p = 0.005$) and an inability to participate in activities ($\beta = 0.063, p = 0.007$).

Table 9

Hierarchical Regression Analysis

Criterion Variable	R^2	R^2 Change	p	Criterion Variable	R^2	R^2 Change	p
Religiosity				Pain Interference			
1	0.034	0.034	<.001	1	0.009	0.009	0.004
2	0.289	0.255	<.001	2	0.091	0.082	<.001
Alcohol Use				3	0.1	0.009	<.001
1	0.008	0.008	0.007	Lack of Companionship			
2	0.083	0.075	<.001	1	0.034	0.034	<.001
3	0.091	0.008	<.001	2	0.143	0.109	<.001
Anxiety				3	0.148	0.006	0.001
1	0.004	0.004	0.173	Anger			
2	0.022	0.017	<.001	1	0.007	0.007	0.02
3	0.023	0.001	0.524	2	0.022	0.014	<.001
Depression				3	0.023	0.002	0.314
1	0.024	0.024	<.001	Stress			
2	0.033	0.009	0.008	1	0.022	0.022	<.001
3	0.044	0.012	<.001	2	0.089	0.067	<.001
Fatigue				3	0.089	0.001	0.722
1	0.017	0.017	<.001	Lonely			
2	0.033	0.016	<.001	1	0.016	0.016	<.001
3	0.041	0.009	<.001	2	0.03	0.014	<.001
Participation				3	0.033	0.003	0.096
1	0.007	0.007	0.02	Sleep			
2	0.063	0.056	<.001	1	0.103	0.103	<.001
3	0.066	0.004	0.046	2	0.344	0.241	<.001
				3	0.355	0.011	<.001

1. Predictors in the model: race, age, gender
2. Predictors in the model: race, age, gender, values
3. Predictors in the model: race, age, gender, values, religiosity, religious-spiritual groups

Mean Plots

In addition to the regression analyses, a One-Way ANOVA was conducted to examine whether there was a significant difference in value scores between people who consider themselves religious and spiritual, not religious but spiritual, not religious and not spiritual, and religious but not spiritual. Figure 1 is radar graph which shows the mean plot for the religiosity and spirituality four groups based on their scores of benevolence ($p = 0.002$), tradition ($p < 0.001$), universalism ($p < 0.001$), and security ($p < 0.001$). The mean plot shows a clear pattern of differences between the groups, with both religious groups scoring higher on tradition and conformity than both non-religious groups, while both non-religious groups scored higher than religious groups universalism, security, and benevolence values.

Figure 2 is a radar graph which shows the mean plot for the religiosity and spirituality four groups based on their scores of achievement ($p < 0.001$), stimulation ($p < 0.001$), hedonism ($p < 0.001$), self-Direction ($p < 0.001$), and power ($p < 0.001$). The mean plot shows a clear pattern of differences between the groups, with both religious groups scoring higher on power, stimulation, and achievement values than both non-religious groups, while both non-religious groups scored higher than religious groups self-direction and hedonism.

Figure 3 is a means plots graph which showcases the mean scores of the four religious and spiritual groups. Those who consider themselves religious and spiritual have the highest religiosity scores, followed by religious but not spiritual, then not religious but spiritual, and finally not religious and not spiritual. These differences were statistically significant according to the results of the one-way ANOVA ($F(3, 2571) = 73.37, p < .001$).

Figure 1

Benevolence, Tradition, Universalism, Security, Conformity, Religion and Spirituality Means Plot

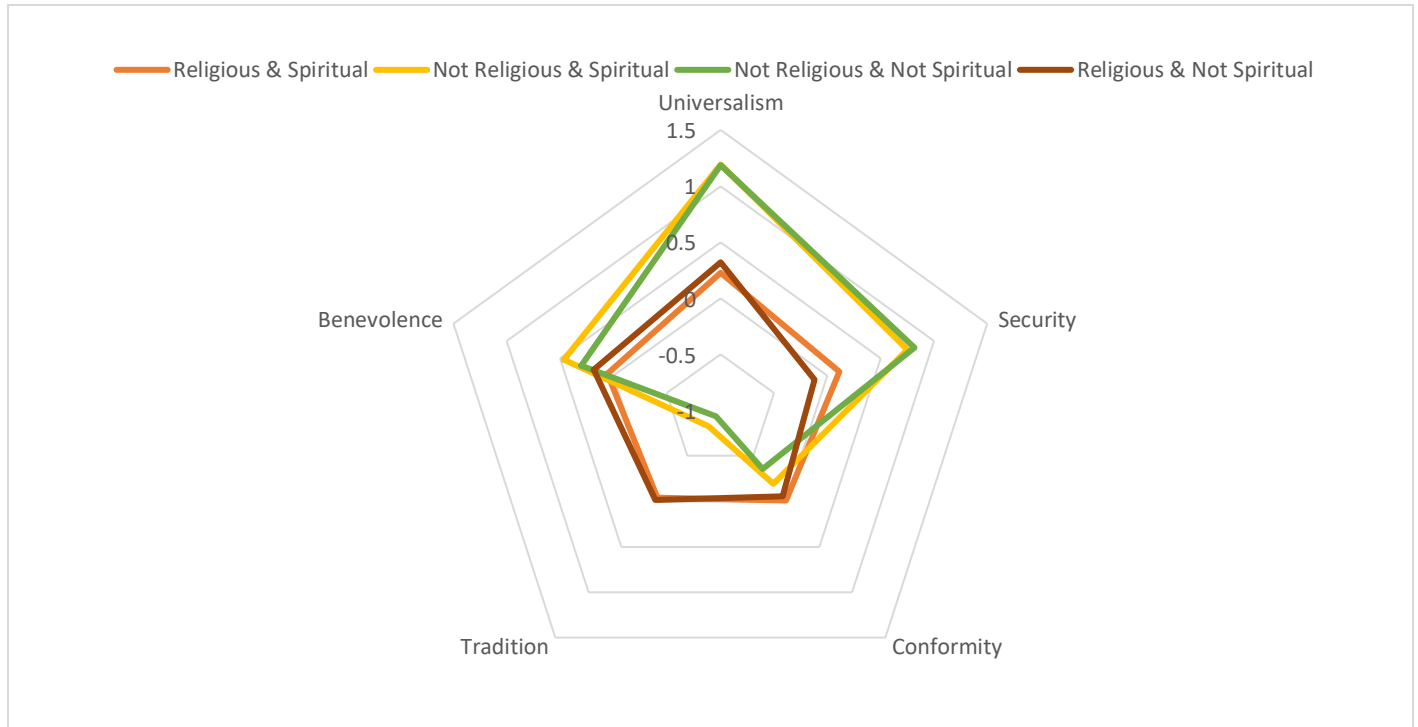


Figure 2

Achievement, Stimulation, Hedonism, Self-Direction, Power, Religion and Spirituality ANOVA

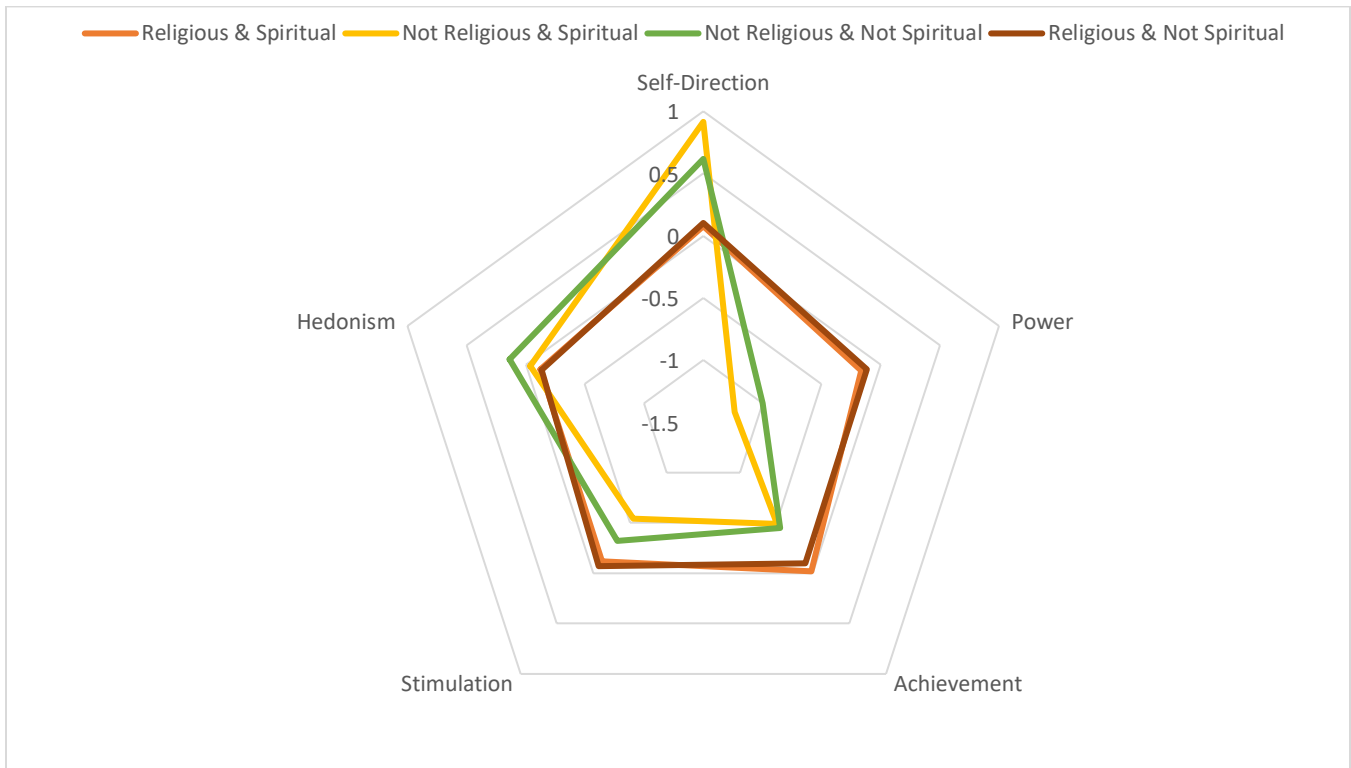
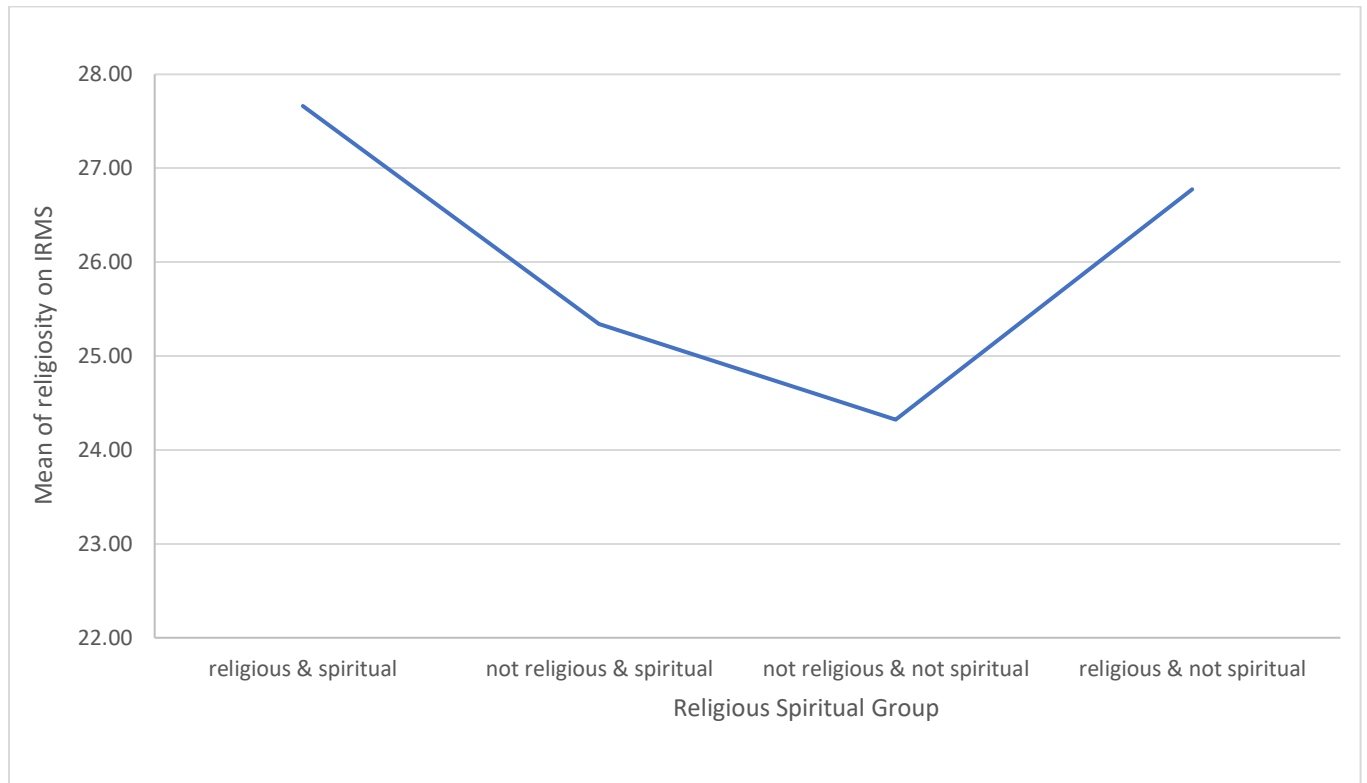


Figure 3

Religiosity and Religious Spiritual Group Means Plot



Discussion

The current study aimed to investigate the relationships between core values, religiosity and spirituality and various health outcomes. This thesis aimed to answer two questions: 1) how are core values and religiosity related, and 2) how are both related to health?

The results from the regression analyses and means plots both suggest that values are related to religiosity. Specifically, tradition was found to be the strongest predictor of high religiosity in the regression analysis and the means plots also showed that religious groups scored higher on tradition and conformity values compared to non-religious groups. Similarly, the regression analysis found that universalism was the strongest predictor of low religiosity, and the means plots showed that both non-religious groups scored higher on universalism values compared to religious groups.

Additionally, the means plots also showed that both religious groups scored higher on power, stimulation, and achievement values compared to non-religious groups. This is consistent with the regression analysis, which found that power was a significant predictor of high religiosity. On the other hand, both non-religious groups scored higher on self-direction and hedonism values compared to religious groups, which is consistent with the regression analysis where hedonism was a significant predictor of low religiosity.

Overall, the results from both the regression analysis and means plots support our hypothesis that values are related to religiosity, and certain values, such as tradition, have a positive relationship with religiosity. The means plots provide a visual representation of how different religious and spiritual groups score on different values, while the regression analysis provides a more quantitative understanding of how values predict religiosity. When combined with religiosity, values did not seem to be related to spirituality. According to the means plots,

there was no significant difference in value ratings between groups that were religiously similar but spirituality different.

The findings from this study show that core values and religiosity have a modest relationship with health. Values have an independent predictive relationship with all health outcomes, with power having the most positive correlations with poor health outcomes. Specifically, power was positively correlated with alcohol use, anxiety, inability to participate in activities, pain interference, anger, and loneliness. Conversely, self-direction was the best predictor of low alcohol use, low anxiety, low depression, and companionship. Achievement was the best predictor of low fatigue and low loneliness.

Moreover, after accounting for core values, religiosity had an additive effect on the understanding of most health outcomes. Religiosity had a significant negative relationship with depression, fatigue, lack of companionship, sleep, and loneliness. These results are consistent with previous research findings which have demonstrated a positive relationship between religiosity and healthy health outcomes (Koenig, 2012). However, religiosity was found to have a positive relationship with pain interference and an inability to participate in activities. These findings support our hypothesis that values and religiosity can be used to predict health.

The effect size for most of these relationships in the regression model are relatively small, meaning that other factors not captured in this study may play a more significant role in determining health outcomes. We are unable to determine if spirituality is a predictor of health, as all four religious-spiritual groups were not significant predictors of the majority of health outcomes.

These results suggest that the combination of religiosity and certain values may be particularly beneficial for health. For example, self-direction in combination with religiosity was found to predict lower levels of anxiety, depression, and loneliness, as well as greater levels of

companionship. This may be because self-direction values emphasize autonomy and self-expression, while religious beliefs and practices emphasize connection to a higher power and the importance of community.

There are several limitations to this study. First, despite performing data cleaning procedures, the final dataset still contained a considerable amount of noise. The REDCap Survey did not include attention check questions. Without these questions, we were unable to determine which participants were paying attention to the questionnaire and responding thoroughly, versus those who rushed through the survey to receive the \$1.50. Without this distinction, our dataset may include inaccurate or unreliable responses, causing misleading or difficult to interpret data, and diminishing effect sizes in the regression analyses. To mitigate the potential influence of response bias, the data was mean-centered. However, it is important to note that this approach may also eliminate some of the individual differences present in the original data. When the data was not mean-centered, all the values exhibited a very strong positive correlation.

Another limitation of this study is the multicollinearity among the 10 values included in the PVQ. As stated in the PVQ scoring guide, the values are completely interdependent, which makes the single regression coefficients for each value difficult to interpret when all 10 values are included in the analysis (Schwartz, et al., 2012). This issue persists even if the multicollinearity statistics do not suggest any problems. Therefore, it may be necessary to consider alternative methods for analyzing the PVQ data or to reduce the number of values included in the analysis to improve the interpretability of the regression coefficients.

A third limitation to this study is the insufficient exploration of spirituality. Due to the lack of reliable and valid measures for spirituality, spirituality was assessed by a simple yes-or-no question asking if the participant considers themselves spiritual. Without a proper measurement scale, we are unable to look into the degrees of spirituality, examine the nuances

within the concept, nor look into a participant's spirituality without comparing it to their religiosity.

Additionally, this sample consisted only of American Amazon MTurk users, making it difficult to generalize these findings to a larger population. The religious makeup of this dataset is very different from the makeup of the United States as a whole, specifically, more Catholic and more religious. According to Pew Research Center (2021), Roman Catholics make up 20% of the U.S. population, while Evangelical Protestants make up 25%. In this study, Roman Catholics make up 64.5% of participants, while Protestants make up only 12.5%. The dataset also includes a relatively high percentage of Jewish participants (6.2%), which is not as common in the U.S. population (2%). The percentage of individuals who identify as unaffiliated with religion in the U.S. is 29%, much larger than the 4.8% of our dataset. These discrepancies are most likely due to MTurk sampling bias. The data are correlation and has a cross-sectional design, so no causal conclusions can be drawn. Future directions for this study can address these issues by looking at health outcomes in a more diverse sample, including attention check questions, determining a better way to measure spirituality, and exploring other methods of analyzing the PVQ data.

In conclusion, there seems to be a significant, additive relationship between values, religiosity, and health. In a world where environmental, health, and technological issues have become increasingly politicized, having a comprehensive grasp on how to effectively inform individuals about scientific topics is a top priority. Understanding the intersection between core values, religiosity, spirituality, and health, is a key component of addressing the broader issue of science communication. Because values influence behavior, people may be more inclined to make certain decisions regarding their health based on their beliefs. As a result, in order to provide adequate information to individuals without advanced scientific knowledge (i.e., the vast

majority of the world), researchers must possess an extensive understanding of the population they are trying to reach. This study has implications for health practitioners and policy makers. Because values and religiosity are predictors of health, interventions targeting values and religiosity may be beneficial in promoting positive health outcomes.

Additionally, this research is applicable to health promotion in faith-based communities. This study can help individuals understand how their beliefs and values influence their health and align their behaviors with personal values and religious beliefs. For instance, we have found that religiosity is a predictor for many positive health outcomes, including a feeling of togetherness. Due to the comradery and community that faith and religion often produce, and a high correlation between religious individuals and those to value tradition and conformity faith-based settings can capitalize on religious experience to promote healthy habits. Holt et al. (2016) found that individuals who participate in religious communities tend to have higher rates of health-promoting behaviors, such as regular exercise and healthy eating habits; this suggests that by integrating health promotion activities into religious gatherings and leveraging religious teachings to promote healthy behaviors, faith-based communities can help their members achieve better health outcomes.

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Appendix

The REDCap Survey used to collect the data for this study is attached.

Core values, spirituality, and health

Please complete the survey below.

Thank you!

Participation in the study involves completing a single online survey using the REDCap platform. This is a survey asking about your values, religiosity, spirituality, and your health. We estimate that it will take 10-15 minutes to complete and you will be compensated with \$1.50 for completing the survey. On the survey, we will also ask for your MTurk identification number. We will use that to verify that you have completed the survey so that we can authorize payment from Amazon Mechanical Turk. Your participation in this study is voluntary. You can decide not to participate, or end your participation at any time. You will only receive compensation from Amazon Mechanical Turk if you complete the entire survey. Your information will be anonymous, that is we only know your MTurk identification number to verify completion and will not obtain any other information from MTurk. All we will know about you is your responses to the questions on the survey. None of these questions will allow us to identify you as an individual. To participate, you must be 18 years or older and be a resident of the United States. The study is being done at Vanderbilt University in Nashville, Tennessee. It has been reviewed and approved by the Vanderbilt Institutional Review Board (IRB).

- Yes
 No

If you have questions about the study or your participation in it, you may contact:
Study Investigator:
Stella Wang : stella.wang@vanderbilt.edu
Faculty Advisor:
David Schlundt, Ph.D.: david.schlundt@vanderbilt.edu

For additional information about your rights as a participant in this study, to discuss problems, concerns, and questions, or to offer input, please feel free to contact the Institutional Review Board Office at (615) 322-2918 or toll free at (866) 224-8273.

I am 18 or older and a resident or citizen of the United States. I agree to participate in this study.

You do not meet the eligibility criteria to complete this survey. Close the window on your browser and find a different HIT to work on today.

*** IMPORTANT **** Amazon Mechanical Turk Worker ID.
Because this survey is hosted on an external server,
we need your MTurk Worker ID to insure that you can be
compensated for completing this task. Also, make note
of the task completion code at the end of the survey
and enter that into the Mturk page you used to launch
this task.

2. How old are you?
- 18-20
 - 21-24
 - 25-29
 - 30-34
 - 35-39
 - 40-44
 - 45-49
 - 50-54
 - 55-59
 - 60-64
 - 65-69
 - 70-74
 - 75 or older
-

1. What is your gender?
- Male
 - Female
 - Other
-

Describe what you mean by other gender.

4. What is your race/ethnicity? (Please check all that apply)
- White
 - Black
 - Asian
 - American Indian or Alaska Native
 - Native Hawaiian or Pacific Islander
 - Hispanic/Latino

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Select the option that shows how much the person in the description is like you. (NOTE: the use of the plural pronoun "them" is used to denote someone without a specific gender, not multiple people.)

	Not like me at all	Not like me	A little like me	Some-what like me	Like me	Very much like me
5. Thinking up new ideas and being creative is important to them. They like to do things in their own original way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. It is important to them to be rich. They want to have a lot of money and expensive things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. They think it is important that every person in the world be treated equally. They believe everyone should have equal opportunities in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. It's very important to them to show their abilities. They want people to admire what they do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. It is important to them to live in secure surroundings. They avoid anything that might endanger their safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. They think it is important to do lots of different things in life. They always look for new things to try.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. They believe that people should do what they're told. They think people should always follow rules, even when no-one is watching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. It is important to them to listen to people who are different from them. Even when they disagree with them, they still want to understand them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. They think it's important not to ask for more than what you have. They believe that people should be satisfied with what they have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.						

- They seek every chance they can to have fun. It is important to them to do things that give them pleasure.
- 15. It is important to them to make their own decisions about what they do. They like to be free to plan and to choose their activities for themselves.
- 16. It's very important to them to help the people around them. They want to care for their well-being.
- 17. Being very successful is important to them. They like to impress other people.
- 18. It is very important to them that their country be safe. They think the state must be on watch against threats from within and without.
- 19. They like to take risks. They are always looking for adventures.
- 20. It is important to them always to behave properly. They want to avoid doing anything people would say is wrong.
- 21. It is important to them to be in charge and tell others what to do. They want people to do what they say.
- 22. It is important to them to be loyal to their friends. They want to devote themselves to people close to them.
- 23. They strongly believe that people should care for nature. Looking after the environment is important to them.
- 24. Religious belief is important to them. They try hard to do what their religion requires.
- 25.

- It is important to them that things be organized and clean. They really do not like things to be a mess.
- 26. They think it's important to be interested in things. They like to be curious and to try to understand all sorts of things.
- 27. They believe all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to them.
- 28. They think it is important to be ambitious. They want to show how capable they are.
- 29. They think it is best to do things in traditional ways. It is important to them to keep up the customs they have learned.
- 30. Enjoying life's pleasures is important to them. They like to 'spoil' themselves.
- 31. It is important to them to respond to the needs of others. They try to support those they know.
- 32. They believe they should always show respect to their parents and to older people. It is important to them to be obedient.
- 33. They want everyone to be treated justly, even people they don't know. It is important to them to protect the weak in society.
- 34. They like surprises and is always looking for new things to do. They think it is important to do lots of different things in life.
- 35. They try hard to avoid getting sick. Staying healthy is very important to them.

36

- Getting ahead in life is important to them. They strive to do better than others.
- 37 Forgiving people who have hurt them is important to them. They try to see what is good in them and not to hold a grudge.
- 38 It is important to them to be independent. They like to rely on themselves.
- 39 Having a stable government is important to them. They are concerned that the social order be protected.
- 40 It is important to them to be polite to other people all the time. They try never to disturb or irritate others.
- 41 They really want to enjoy life. Having a good time is very important to them.
- 42 It is important to them to be humble and modest. They try not to draw attention to themselves.
- 43 They always want to be the one who makes the decisions. They like to be the leader.
- 44 It is important to them to adapt to nature and to fit into it. They believe that people should not change nature.

In this next section, we ask you to tell us about how you see yourself in terms of religion.

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
45 My Faith involves all of my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46 One should seek God's guidance when making every important decision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47 In my life I experience the presence of the Divine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48 My faith sometimes restricts my actions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49 Nothing is more important to me as serving God as best I know how	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50 I try hard to carry my religion over into all of my other dealings in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
51 My religious beliefs are what really lie behind my whole approach to life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52 It doesn't matter so much what I believe as long as I live a moral life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53 I refuse to let religious considerations influence my everyday affairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54 I feel there are many more important things in life than my religion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<hr/>				
		Yes		No
55 Do you think of yourself as a religious person?		<input type="radio"/>		<input type="radio"/>
56 Do you think of yourself as a spiritual person?		<input type="radio"/>		<input type="radio"/>

57 What is your present religion, if any?

- Protestant (Baptist, Methodist, Non-denominational, Lutheran, Presbyterian, Episcopalian, Reformed, Church of Christ, Jehovah's Witness, etc.)
- Roman Catholic (Catholic)
- Mormon (Church of Jesus Christ of Latter-day Saints/LDS)
- Orthodox (Greek, Russian, or some other orthodox church)
- Jewish (Judaism)
- Muslim (Islam)
- Buddhist
- Hindu
- Atheist (do not believe in God)
- Agnostic (not sure if there is a God)
- Something else
- Nothing in particular

If your religion was not listed, please specify

In the past 30 days ...

	Never	Rarely	Sometimes	Often	Always
58 I spent too much time drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59 I finished several drinks fast to get a quick effect	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60 I drank heavily at a single sitting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
61 I drank too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
62 I drank throughout the day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
63 I used alcohol and other drugs together, to get high	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
64 I drank more than planned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
65 I had an urge to continue drinking once I started	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
66 I felt that I should cut down on my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
67 I had trouble controlling my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
68 It was difficult for me to stop drinking after one or two drinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
69 I had urges to drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer the following questions by clicking the choice that best describes you

	Without any difficulty	With a little difficulty	With some difficulty	With much difficulty	Unable to do
70 Are you able to do chores such as vacuuming or yard work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
71 Are you able to go up and down stairs at a normal pace?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
72 Are you able to go for a walk of at least 15 minutes?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
73 Are you able to run errands and shop?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 7 days ...

	Never	Rarely	Sometimes	Often	Always
74 I felt fearful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
75 I found it hard to focus on anything other than my anxiety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
76 My worries overwhelmed me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
77 I felt uneasy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 7 days...

	Never	Rarely	Sometimes	Often	Always
78 I felt worthless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
79 I felt helpless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
80 I felt depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
81 I felt hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During the past 7 days...

	Not at all	A little bit	Somewhat	Quite a bit	Very much
82 I feel fatigued.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
83 I have trouble starting things because I am tired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
84 How run-down did you feel on average?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
85 How fatigued were you on average?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 7 days ...

	Not at all	A little bit	Somewhat	Quite a bit	Very much
86 My sleep was refreshing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
87 I had a problem with my sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
88 I had difficulty falling asleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 7 days ...

89 My sleep quality was Very poor Poor Fair Good Very Good

○ ○ ○ ○ ○

Answer the following questions by clicking the choice that best describes you

- | | Never | Rarely | Sometimes | Often | Always |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 90 I have trouble doing all of my regular leisure activities with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 91 I have trouble doing all of the family activities that I want to do | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 92 I have trouble doing all of my usual work (include work at home). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 93 I have trouble doing all of the activities with friends that I want to do. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In the past 7 days...

	Not at all	A little bit	Somewhat	Quite a bit	Very much
94 How much did pain interfere with your day to day activities?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
95 How much did pain interfere with work around the home?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
96 How much did pain interfere with your ability to participate in social activities?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
97 How much did pain interfere with your household chores?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer the following questions by clicking the choice that best describes you

- | | Never | Rarely | Sometimes | Often | Always |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 98 Do you have someone with whom to have fun? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 99 Do you have someone with whom to relax? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 100 Do you have someone with whom you can do something enjoyable? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 101 Can you find companionship when you want it? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In the past month ...

	Never	Rarely	Sometimes	Often	Always
102 How often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
103 How often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
104 How often have you felt nervous and "stressed"?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
105 How often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
106 How often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
107 How often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
108 How often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
109 How often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
110 How often have you been angered because of things that happened that were outside of your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
112 How often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past month, describe how often ...

	Never	Rarely	Sometimes	Often	Always
113 I feel alone and apart from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
114 I feel left out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
115 I feel that I am no longer close to anyone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
116 I feel alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
117 I feel lonely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 7 days ...

	Never	Rarely	Sometimes	Often	Always
118 I was irritated more than people knew	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
119 I felt angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
120 I felt like I was ready to explode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
121 I was grouchy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
122 I felt annoyed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>