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Christian internalization of a healthy lifestyle: A theoretical analysis

Mark D Faries
Texas A&M AgriLife Extension Service, USA; Texas A&M School of Public Health, USA; Texas A&M School of Medicine, USA

Stephen D Green
Autumn Green
Texas A&M AgriLife Extension Service, USA

Abstract

This study explored Christians' view that living a healthy lifestyle by eating right and exercising was essential to what being a Christian meant to them, theoretically representing internalization of these health behaviors into one's religious values and identity. Using a secondary data analysis of Pew Research Center survey data, we found that a minority of Christians (16%) internalized a healthy lifestyle; who also tended to be more religious, as expressed by believing in God, reading scripture, praying, and volunteering at church. The results provide preliminary support for the theorized disconnect in religious internalization of certain health behaviors, but not others. However, further exploratory analysis suggests that individuals who are a part of denominations that more recognizably express the importance of a healthy lifestyle as a part of their religious beliefs, and internalize this belief, might subsequently participate in and self-report healthier behavior.

Keywords

Health, integration of psychology and theology, religion, self-regulation, theology

Introduction

Religious values are an important and prevalent aspect of daily life. Nationally, the Pew Religious Landscape Study has found that over 70% of polled adults identify with a Christian religious affiliation, and nearly 80% self-report that religion plays an "important" to "very important" role in their lives (Pew Research Center, 2018). In Texas, where the authors practice, these connections are even more prominent, with 77% of adults indicating affiliation with the Christian religion, and 86% reporting an important role in their lives.

Corresponding author:
Mark D Faries, Family & Community Health, Texas A&M AgriLife Extension Service, 1470 William D. Fitch Pkwy, College Station, TX 77845-2251, USA.
Email: Mark.Faries@tamu.edu

However, due to the impact of chronic disease and premature death, there is the question of whether religion can occupy a prominent enough role to influence the lifestyle factors that increase risk of chronic disease including unhealthy diets, physical inactivity, and obesity (Centers for Disease Control and Prevention, 2019; Mokdad et al., 2004; Mokdad et al., 2018). In response, "faith-based" initiatives (i.e. those that are integrated with *or* into one's faith) have been proposed in an effort to tap into these strong, personally held beliefs and values, as well as provide healthy alterations to church environments. However, despite well-designed and implemented interventions aimed at improving healthy eating and physical activity outcomes, the applied (clinical) effects are generally null to small (e.g. Bopp et al., 2012; Harmon et al., 2014; Hermstad et al., 2018; Hornbuckle et al., 2019; Lynch et al., 2019; Tristão Parra et al., 2018; Wilcox et al., 2018).

Religious beliefs and health behavior

There is still much to be learned on the role of religion and health behavior, especially in relation to chronic disease. In general, there is a well-established, positive link between religiosity (i.e. piety, devotion to religious behavior, and/or traditions), satisfaction with spiritual needs, and health, although the relationships can be mixed with chronic disease outcomes (Bentley-Edwards et al., 2020; Godbolt et al., 2018; Koenig, 2015; Krause et al., 2014; Meng et al., 2019; Obisesan et al., 2006; Roger & Hatala, 2018; Shattuck & Muehlenbein, 2020; Yeary et al., 2017). While this variance could be explained by the complexity of religiosity as a construct, variation in how it is operationalized (e.g. affiliation, activity, belief), measurement difficulties, and complex or abstruse meta-analytical approaches, "there remain many important, unresolved questions regarding how individual-level religious participation shapes health" (Chen & VanderWeele, 2020, p. 759 ; Shattuck & Muehlenbein 2020).

Disconnects in religion and health behavior

One question is the perceived disconnect of certain unhealthy lifestyles with religious values. For example, while a relationship emerges between religiosity and certain chronic disease-related risk behaviors, such as alcohol and smoking (e.g. Kim et al., 2003; Reeves et al., 2012), other behaviors, such as (un)healthy eating and physical (in)activity, can remain disconnected from religious consideration—and unhealthy meals and foods remain common for church-related events in both adults and children (Kegler et al., 2012; Opalinski et al., 2019; Roozen, 2010). As Kim and Sobal (2004) concluded in their study, "in contemporary US society religion may play a small role in the context of how diet and exercise are developed and maintained" (p. 773). Thus, a theoretical understanding as to why Christians might disconnect (or connect) certain health behaviors from their personal, religious perspective, could be advantageous in explaining variance in attitudes, motivation, and adoption of those health behaviors. The role of "internalization"—generally to identify with, accept, or incorporate behavior into one's values, identify, and self-concept—can provide insight.

Spiritual identity and religious sentiments

One's "spiritual identity" has been generally referred to as the awareness and connectedness of self, as an eternal being, in relation to God (Poll & Smith, 2003). William James (1890, 1961), coined the term "spiritual me," to represent our collective inner core or nucleus of being, including our religious aspirations and conscientiousness. Gordon W. Allport proposed a conception of religious orientation, with distinction between mature (intrinsic) and immature (extrinsic) religious

sentiments (Allport, 1950; Allport & Ross, 1967). To Allport, those with an *intrinsic religious orientation* find their life motive in religion, and to be of ultimate significance. Other needs are proposed to be regarded as less ultimate in their significance, and brought into harmony with one's religious beliefs and values. It is in this sense that the person "*lives* his religion" (Allport & Ross, 1967, p. 434).

Self-determination theory and internalization

Perhaps most pertinent, self-determination theory (SDT; Ryan & Deci, 2000) posits levels within a continuum of self-determination, representing to what degree a motivation to regulate behavior for an outcome (e.g. one's health) is internalized into one's sense of self (i.e. self-concept/identity). Specifically, "*identified* regulation" occurs when behavioral goals, extrinsic to the behavior itself, are perceived as personally relevant, meaningful, and valued. Interestingly, Neyrinck and colleagues (2010) used correlational analysis to propose that Allport's *intrinsic religious orientation*, the full acceptance and endorsement of one's religious contents, is similar to SDT's *identified* regulation's valuation of religion.

A more internalized behavior, "*integrated* regulation" occurs when behavioral goals are, "fully assimilated to the self, which means they have been evaluated and brought into congruence with one's other values and needs" (Ryan & Deci, 2000, p. 73). As more integration into the self occurs, motivation, and successful regulation of the behavior should be enhanced. Support for this theoretical connection has been shown with religious internalization, and its positive relationship with church attendance, and negative relationship with mental health concerns (Ryan et al., 1993). More *integrated* regulation of behavior stands in contrast to "*introjected* regulation," where behaviors are motivated by self-approval, guilt, or avoidance of punishment for sin (Holt et al., 2014; Neyrinck et al., 2006; Ryan et al., 1993). However, considering the hierarchical structure of self-concept (Marsh & Shavelson, 1985), no known research has examined the internalization of health behaviors into one's more specific, religious identity. In other words, could health behaviors assimilated into one's Christian identity (i.e. integrated regulation) lead to better behavioral and health outcomes?

Behavioral self-regulation toward valued goals

Theories of behavioral self-regulation suggest that the process of monitoring and changing our behavior is organized around important, personally valued goals. Higher goals (i.e. Be goals), such as to "be healthy" or "be holy" are considered intrinsically important (Carver & Scheier, 1998; Rasmussen et al., 2006). Thus, any lower-level behavioral goals that align, including physical activity or eating healthfully will be viewed as more important, if one believes engaging in the behavior contributes toward the highly valued, intrinsically important goals.

In theory, without internalization of (un)healthy eating or physical (in)activity, there would be little to no enhancement in intrinsically derived motivation or self-regulatory capacity for those behaviors. Interestingly, Pfeiffer and colleagues (2018) discovered that internalization of religiosity was *negatively* related to healthy eating behavior, which is the opposite of what we might have hypothesized. However, this relationship was moderated by self-reported religious behavior. In those who reported higher practiced religiosity (i.e. higher church attendance, prayer, studying scripture), there was a *positive* relationship to healthy eating behavior. Also, the sample included a prominent percentage of Seventh Day Adventists who are well-known advocates for a religious basis for healthy diets.

In other words, it is possible that those *who do* internalize healthy eating into their religious values might better translate their beliefs into behavior. On the contrary, those *who do not* internalize healthy eating might be more accepting of and prone to poorer dietary behavior, or even promote unhealthy eating through church events. This perspective could also explain why the more entrenched religiosity becomes, especially within those of a Protestant faith, the greater likelihood of negative health behaviors and outcomes, including excessive dietary intake, and an increased risk of overweight/obesity (Cline & Ferraro, 2006; Kim & Sobal, 2004; Yeary et al., 2017).

Sanctification theory and sacred strivings

Similarly, sanctification theory is interested in how people perceive aspects of life, including behavior and outcomes, as having spiritual, divine, or sacred significance and character (Mahoney, Pargament, et al., 2005; Pargament & Mahoney, 2005). Within a sample of college students, the perception of how sanctified one's body is endowed with sacred qualities and purpose was positively, but weakly correlated with general exercise level and frequency of vigorous exercise per week (rs = 0.12–0.20; Mahoney, Carels, et al., 2005).

Perhaps, as is suggested, the more "sanctified" the behavior, the greater probability of adherence to that behavior. For example, spiritual strivings (i.e. desire to transcend the self toward the infinite, what is most valued or held sacred) are thought to be more important and pursued for intrinsic reasons, thus increasing probability of adherence (Mahoney, Pargament, et al., 2005). In support, spiritual strivings have been associated with subjective well-being, greater positive psychosocial adjustment across various life domains, marital satisfaction, and higher rates of abstention from alcohol during alcoholism treatment (Mahoney et al., 2021; Schnitker & Emmons, 2013). However, it is unclear whether health behaviors, including diet and physical activity, are commonly "sanctified," or if sanctifying a health behavior indicates internalization of that behavior into one's religious values.

Needed research

While previous research has examined "general" religious behavior internalization (e.g. prayer, going to church, reading Bible), no known research has examined the possibility of internalizing health behaviors into one's religious values, and subsequently how such specific internalization could relate to or influence enacting those behaviors. Also, it is currently unknown *why* certain health behaviors have been presumed to be internalized in Christian, religious beliefs and values, such as not smoking, not drinking too much, or not doing drugs, while other behaviors have not, such as (un)healthy eating physical (in)activity.

The lack of health behavior internalization could provide a theoretical explanation for the null or weak, applied effects of well-designed and implemented faith-based interventions aimed at improving healthy eating and physical activity outcomes. In addition, the lack of internalization could help inform public health and Cooperative Extension efforts when encountering hesitancy from churches to collaborate on healthy eating and physical activity programming.

While contemplating such concerns, we became increasingly interested in data from a Pew Research Center survey on "Religion in Everyday Life." A self-report item from this survey appears to provide insight, revealing if living a healthy lifestyle by eating right and exercising regularly is "essential to what being a Christian/Catholic means to you," which is theoretically consistent with an internalization of that behavior into their own Christian values and identity (i.e. identified and integrated regulation).

The purpose of this study, therefore, was to further explore the dataset to help enlighten our understanding of (a) the prevalence of self-professed Christians from various denominations who have internalized a healthy lifestyle of eating right and exercising into their Christian identity, (b) possible differences in demographics, certain health behaviors and religiosity between those who believed a healthy lifestyle by eating right and exercising regularly was "essential" versus those who stated it was "not essential," (c) determine whether any assessed variables could predict classification of individuals into the "essential" group, and (d) if essentiality varies among denominations in line with proposed theoretical conceptions.

Method

Participants

Participants were a part of the Pew Research Center's "American Trends Panel" (Wave 6; August 2014), randomly selected, and recruited as a nationally representative sample within the 2014 "U.S. Religious Landscape Study." As described on the methodology website (https://www.pewforum.org/2016/04/12/methodology-7/), 9809 adults were invited to take part in the panel, with 5338 agreeing to participate. The web component had a response rate of 62% (2923 responses among 4702 web-based individuals enrolled in the panel), while the mail component had a response rate of 64% (355 responses among 559 non-web individuals enrolled in the panel). Thus, the final dataset provided by Pew Research Center included a total sample of 3278 adult respondents. For the purposes of this study, we were only interested in those self-reporting a Christian faith. Participants who reported non-Christian faiths ($n = 245$) or who were religiously unaffiliated ($n = 722$) were removed from the sample. Also, $n = 32$ were removed for missing data from the essentiality, religiosity, and healthy lifestyle variables, resulting in the final dataset sample size of $N = 2279$.

Measures

Internalization/essentiality. To operationalize internalization of a healthy lifestyle into one's Christian identity/values, a response from a single item was used. Specifically, the question asked respondents to report, "How important living a healthy lifestyle by eating right and exercising regularly is to what being a Christian (or Catholic) means to you." Three responses were available, including "*essential* to what being a Christian/Catholic means to you," "*important* but not essential," or "*not important*." For analyses, two groups were created: (a) those who believe that living a healthy lifestyle was "*essential*" and (b) "*not essential*," which included *important* plus *not important* responders.

Healthy lifestyle. Two measures were used to designate the healthy lifestyle category. Vigorous exercise was assessed by the number of times in the past week that each participant did some kind of vigorous exercise (e.g. running, playing a sport, or working out at a gym). Participants were also asked, in the past week, did they ever eat too much, with a yes/no response.

Religiosity. Five measures were used to create the religiosity category. For belief in God, participants were asked whether believing in God was *not important*, *important* but not essential, or *essential* to what being a Christian/Catholic meant to them. For analyses, two groups were created: (a) those who's belief in God was "*essential*" and (b) "*not essential*," which included *important* plus *not important* responders. For religious behaviors, participants were asked how often they *pray* outside of attending religious services (7-point scale from *never* to *several times per day*),

read scripture outside of religious services (5-point scale from *never* to *at least once a week*), *volunteer* or help out in a church or other religious congregation (5-point scale from *never* to *at least once a week*), and *attend religious services* (6-point scale from *never* to *more than once a week*).

Demographics. The survey also collected race/ethnicity (White non-Hispanic, Black non-Hispanic, Hispanic, Other), individual income per year (<US$30,000, US$30,000–US$74,999, ⩾US$75,000), marital status (married, living with a partner, divorced, separated, widowed, never been married), sex, age category (18–29, 30–49, 50–64, ⩾65 years of age) and census region based on self-reported zip code (Northeast, Midwest, South, West).

For religious affiliation, Pew Research Center's offers various variables including different categories, with the most common affiliations of Protestant and Catholic (https://www.pewresearch.org/methods/u-s-survey-research/questionnaire-design). Due to the expansive list of denominations available, the "Protestant Family" variable provided the simplest structure for Aim 4 analysis across denominations. The original variable contained 18 denomination options, of which were categorized into 11 to best represent common denominations, describe the present sample, and elucidate possible internalization in denominations who actively promote and/or support healthy lifestyles (i.e. health promoting denominations). See Table 3 for the list of denomination families.

Statistical analysis

Demographic and descriptive characteristics were summarized through percentage tabulations for categorical variables, and means and standard deviations for continuous variables. An independent *t*-test was used to assess the mean difference in vigorous exercise between those who believe that living a healthy lifestyle by eating right and exercising regularly was "essential" versus "not essential," and Cohen's *d* was used as a measure of effect size. Small, medium, and large effect sizes were interpreted as $d = 0.20, 0.50, 0.80$, respectively.

A Pearson chi-square test was utilized to assess the association between each independent variable and the main outcome variable ("essential" vs "not essential"; see Table 1). Independent variables with two responses (i.e. no, yes) were dummy coded as 0 and 1, respectively. Independent variables with multiple responses were categorized into two categories for simple analysis. Table 1 displays the target group of each independent variable (dummy code = 1). In certain cases, such as race/ethnicity, income, age, and religion, multiple dummy coded variables were created to evaluate potential differential relationships with the target group of the dependent variable (1 = *essential*). Small, medium and large effect sizes were interpreted as phi (φ) = 0.10, 0.30, 0.50, respectively.

Statistically significant univariate associations from the Pearson chi-square test were entered into logistic regression to further specify predictive relationship between any of the predictor variables from the chi-square analyses and the main categorical outcome variable ("essential" vs "not essential"). All predictor variables were entered simultaneously (Table 2). Both the Omnibus Test and Hosmer and Lemeshow Test were interpreted for determination of model fit to the data. Nagelkerke R^2 was interpreted for an estimation of variance in the outcome variable explained by the predictor variables in the model. Alpha was set at $\alpha \leqslant 0.05$.

Finally, a descriptive analysis was completed to determine whether essentiality, eating too much, and level of vigorous physical activity differed across the various denominations (Table 3). The frequency of each denomination across "essential" and "not essential" groups was calculated, which could be compared with overall sample findings. Next, both frequency of those self-reporting eating too much in the past week (% "yes") and the mean self-reported vigorous physical activity (# times/week) were calculated overall for each denomination, and between essentiality groups. The *former* analysis allows for visual comparison of outcomes between denominations, and if

Table 1. Differences between those answering if living a healthy lifestyle by eating right and exercising is "essential" to what being a Christian means to them (i.e. internalized) or not essential (i.e. not internalized).

	Essential?		*Statistic*	*Effect*
	No	Yes	*t or* χ^2	*d or* φ
Healthy Lifestyle				
Vigorous exercise (# times/week)[a]	2.29 ± 2.64	2.95 ± 2.70	−4.31*	0.25
Eat too much (yes)	60.4%	54.2%	4.76*	−0.03
Religiosity				
Believe in God ("essential")	84.4%	94.3%	24.67*	0.10
Pray (⩾1 time/day)	49.6%	70.8%	55.04*	0.16
Read scripture (⩾1 times/week)	29.2%	50.8%	64.61*	0.17
Volunteer (⩾1 time/week)	12.5%	23.8%	32.12*	0.12
Attend religious service (⩾1 times/week)	45.8%	62.1%	32.36*	0.12
Demographics				
Race/ethnicity (%)				
White non-Hispanic	80.2%	60.4%	68.12*	−0.17
Black non-Hispanic	7.7%	18.3%	40.34*	0.13
Hispanic	7.3%	12.8%	12.55*	0.07
Income (%)				
<US$30,000 per year	23.9%	32.1%	15.25*	−0.07
⩾US$75,000 per year	39.0%	30.6%	12.86*	−0.06
Religion (%)				
Protestant	65.4%	73.5%	9.16*	0.06
Catholic	30.0%	17.2%	24.83*	−0.11
Marital status (%)				
Married	57.3%	53.7%	1.60	−0.03
Sex				
Male	45.9%	42.9%	1.14	−0.02
Age (%)				
18–29 years of age	11.8%	14.3%	1.86	0.03
⩾50 years of age	61.2%	61.2%	0.00	0.00
Region (%)				
South	35.3%	40.2%	3.18	0.04

Note. Small/medium/large effects sizes for *d* and φ were 0.20/0.50/0.80 and 0.10/0.30/0.50, respectively.
*$p \leq 0.05$.
[a]Only variable evaluated with *t*-test statistic (*t*) and Cohen's *d* effect size (*d*). All other variables were evaluated with the Pearson chi-square test (χ^2) and phi effect size (φ).

there is overall variation in denominations who often promote and support healthy lifestyle compared with other denominations. Since the overall analysis includes individuals within each denomination who believe a healthy lifestyle is either "essential" or "not essential," the *latter* analysis allows exploration of outcomes within those who believe a healthy lifestyle is "essential" across denominations. We hypothesized that those in denominations that are more often known to promote and support healthy lifestyles will have lower frequency of overeating and higher vigorous physical activity, especially within those individuals who have internalized a healthy lifestyle ("essential" group).

Table 2. Results from logistic regression to determine odds of various predictors for the belief that living a healthy lifestyle by eating right and exercising is "essential" to what being a Christian means to them (target outcome group; dummy code = 1).

Predictor	Dummy code		Log odds	SE	*p*	OR	95% CI
	0	1					
Believe in God	No	Yes	0.67	0.25	0.01	1.96	1.20–3.20
Read Scripture	<1 time/week	⩾1 time/week	0.43	0.16	0.01	1.54	1.14–2.10
Pray	<1 time/day	⩾1 time/day	0.42	0.16	0.01	1.52	1.12–2.06
Volunteer	<1 time/week	⩾1 time/week	0.40	0.17	0.02	1.49	1.07–2.07
Vigorous exercise	Number of times/week		0.08	0.02	0.00	1.08	1.04–1.13
Ethnicity, White	Other	White non-Hispanic	−0.59	0.25	0.02	0.56	0.34–0.91
Ethnicity, Hispanic	Other	Hispanic	0.35	0.30	0.24	1.42	0.79–2.56
Ethnicity, Black	Other	Black non-Hispanic	0.35	0.29	0.23	1.41	0.81–2.48
Religion, Protestant	Other	Protestant	0.20	0.14	0.18	1.22	0.92–1.61
Income, US$30,000	⩾US$30,000/year	<US$30,000/year	0.16	0.15	0.30	1.17	0.87–1.56
Service attendance	<US1 time/week	⩾US1 time/week	0.04	0.15	0.78	1.04	0.78–1.40
Eat too much	No (in past week)	Yes (in past week)	−0.10	0.13	0.44	0.91	0.71–1.16
Income, US$75,000	<US$75,000/year	⩾US$75,000/year	−0.20	0.15	0.19	0.82	0.61–1.10

N = 2,279; SE: standard error; OR: odds ratio; CI: confidence interval for OR.

Specifically, Holiness, Methodist, and Episcopal denomination families commonly support a healthy lifestyle as a more integral aspect of their religious beliefs. Adventist or Mormon families often have more specific dietary restrictions embedded in their religious teachings and practices (e.g. veganism, vegetarianism, avoiding caffeine). Orthodox Christians and Pentecostal families were available within the present dataset to independently evaluate for exploratory reasons. In relation to health behavior, the Orthodox Church teachings include that the body and soul are inseparable a part of the human person (i.e. not separable into distinct material versus spiritual aspects), self-control of the passions, and fasting weekly and for various feasts throughout the year. Those within the Pentecostal family of denominations often promote various aspects of spiritual or divine healing to the body, and debated whether such beliefs either promote or diminish need for healthy lifestyles. The purpose of this analysis was to be descriptive in nature, as there was unequal sampling across denominations, and the highlighted denominations that often promote healthy lifestyles in their beliefs were of smaller sample sizes than the other denominations. Thus, no statistics were conducted, rather this data was shown to elucidate preliminary support of the proposed theoretical conceptions of internalization.

Results

Sample description

For race/ethnicity, the majority of the sample self-reported to be White, non-Hispanic (76.9%), followed by Black non-Hispanic (9.4%) and Hispanic (8.3%). For sex, 54.6% self-reported female, and 45.4% male. For marital status, 56.7% were married, and 43.3% not married. For age, 34.3% were 50–64 years of age, 26.9% were ⩾65 years, 26.6% 30–49 years, and 12.2% were 18–29 years. For census region, 36.1% were in the South, 24.6% in Midwest, 22.2% in West, and 17.1% in Midwest. Additional sample descriptors are included in Table 1.

Table 3. Descriptives by denomination and essentiality with overeating and vigorous exercise.

Denomination	Overall	Essential?[a]		Difference[b]
		No	Yes	
Catholic (n = 631)		90%	10%	
Eat too much (yes)[c]	59.4%	59.0%	62.9%	3.9%
Vigorous exercise (# times/week)	2.59 ± 2.93	2.40 ± 2.57	2.94 ± 2.48	0.54
Baptist (n = 354)		78.2%	21.8%	
Eat too much (yes)	58.5%	60.3%	51.9%	-8.4%
Vigorous exercise (# times/week)	2.58 ± 2.93	2.37 ± 3.00	3.35 ± 2.55	0.98
Nondenominational (n = 222)		82.9%	17.1%	
Eat too much (yes)	57.7%	58.2%	55.3%	-2.9%
Vigorous exercise (# times/week)	2.32 ± 2.15	2.15 ± 2.17	3.16 ± 1.85	1.01
Methodist (n = 170)		85.3%	14.7%	
Eat too much (yes)	58.8%	59.3%	56.0%	-3.3%
Vigorous exercise (# times/week)	2.08 ± 2.53	1.87 ± 2.05	3.35 ± 2.55	1.48
Protestant, non-specific (n = 166)		85.9%	14.1%	
Eat too much (yes)	57.8%	58.6%	56.5%	-2.1%
Vigorous exercise (# times/week)	2.71 ± 3.98	2.68 ± 4.20	2.70 ± 2.53	0.02
Lutheran (n = 138)		92.0%	8.0%	
Eat too much (yes)	68.6%	69.0%	63.6%	-5.4%
Vigorous exercise (# times/week)	2.22 ± 2.59	2.22 ± 2.59	2.45 ± 2.73	0.23
Pentecostal (n = 122)		73.0%	27.0%	
Eat too much (yes)	50.8%	59.6%	27.3%	-32.3%
Vigorous exercise (# times/week)	2.39 ± 2.33	2.49 ± 2.48	2.12 ± 1.88	-0.37
Presbyterian (n = 105)		82.9%	17.1%	
Eat too much (yes)	61.0%	62.1%	55.6%	-6.5%
Vigorous exercise (# times/week)	2.61 ± 2.35	2.51 ± 2.47	3.11 ± 1.64	0.60
Anglican/Episcopal (n = 66)		87.9%	12.1%	
Eat too much (yes)	48.5%	50.0%	37.5%	-12.5%
Vigorous exercise (# times/week)	2.80 ± 2.13	2.67 ± 2.09	3.75 ± 2.31	1.08
Orthodox Christian (n = 23)		87.0%	13.0%	
Eat too much (yes)	73.9%	75.0%	33.3%	-41.7
Vigorous exercise (# times/week)	1.87 ± 1.87	1.80 ± 1.82	2.33 ± 2.52	0.53
Holiness (n = 28)		75.0%	25.0%	
Eat too much (yes)	57.1%	61.9%	42.9%	-19.0%
Vigorous exercise (# times/week)	1.63 ± 1.78	1.20 ± 1.48	2.85 ± 2.12	1.65
Adventist (n = 18)		50.0%	50.0%	
Eat too much (yes)	66.7%	77.8%	55.6%	-22.2%
Vigorous exercise (# times/week)	1.78 ± 1.80	1.67 ± 2.06	1.89 ± 1.62	0.22
Mormon (n = 69)		63.8%	36.2%	
Eat too much (yes)	73.9%	68.2%	84.0%	15.8%
Vigorous exercise (# times/week)	2.34 ± 2.56	2.20 ± 2.66	2.60 ± 3.15	0.40
All other (n = 163)		84.0%	16.0%	
Eat too much (yes)	58.9%	62.0%	42.3%	-19.7%
Vigorous exercise (# times/week)	2.08 ± 2.36	1.89 ± 1.76	3.04 ± 4.26	1.15

[a]Those answering if living a healthy lifestyle by eating right and exercising is "essential" (yes) or "not essential" (no) to what being a Christian means to them.

[b]Expressed as the difference in frequency (eat too much = "yes") or mean (vigorous exercise = # times/week) between those stating a healthy lifestyle is "essential" (Yes) minus those stating it is "not essential" (No). A negative difference represents the "essential" group was less than the "not essential" group.

[c]Participants were asked, in the past week, did they ever eat too much.

Internalization/essentiality differences

A minority of respondents (16.1%) believed that living a healthy lifestyle by eating right and exercising regularly was "essential" to what being a Christian meant to them, with 83.9% believing such a lifestyle was "not essential." Group differences were found in vigorous exercise, with those in the "essential" group self-reporting an average of 0.66 more times per week than those in the "not essential" group ($t = -4.31$, $p < 0.05$); however, the effect size was small ($d = 0.25$; Table 1). Linear correlations did not reveal multicollinearity, but highlighted statistically and clinically significant relationships of prayer with reading scripture ($r = 0.41$, $p < 0.01$) and volunteering ($r = 0.62$, $p < 0.01$), while reading scripture was positively correlated with volunteering ($r = 0.41$, $p < 0.01$).

All chi-square analyses are shown in Table 1. While the effects were small to moderate ($\varphi = 0.10–0.17$), findings suggest a positive association where those in the "essential" group had higher percentages of respondents who were more religious, as represented by believing in God, praying more often, reading scripture, volunteering and attending religious services more regularly. In comparison to the "not essential" group, the "essential" group was represented by a 6% lower percentage reporting eating too much in the past week, 8% less White non-Hispanics, and an 11% higher percentage of Black non-Hispanic, 8% more earning an income <US$30,000 per year, and 8% more self-reporting a Protestant religion.

Internalization/essentiality relationships

Table 2 shows results from the logistic regression, which determined the odds of various predictors for falling within the outcome of interest—the belief that living a healthy lifestyle by eating right and exercising is "essential" to what being a Christian means to them. Both the Omnibus ($\chi^2 = 165.62$, $df = 13$, $p = 0.00$) and Hosmer and Lemeshow ($\chi^2 = 3.55$, $df = 8$, $p = 0.90$) tests suggested good model fit to the data. The Nagelkerke R^2 estimated 13% ($R^2 = 0.13$) of the variance was accounted for by the model. The 13 statistically significant variables from the chi-square test were entered as predictors, and 6 variables were found to be significant predictors of increased/decreased odds of falling into the target "essential" group, while controlling for other variables in the model. The strongest predictor was *believing in God*, increasing odds by 96% (OR = 1.96), followed by *reading scripture* ⩾1 time per week, *praying* ⩾1 time per day, and *volunteering* ⩾1 time per week increasing odds between 49% and 54% (OR = 1.49 to 1.54), respectively. Every 1 time per week participation in vigorous exercise increased odds of being in the "essential" target group by 8% (OR = 1.08), while self-reporting being *White non-Hispanic* decreased odds by 44% (OR = 0.56).

Essentiality by denomination

As shown in Table 3, the majority of the denominations were similar to the overall frequency of 16% who believed that living a healthy lifestyle by eating right and exercising is "essential" to what being a Christian means to them (answering "yes"). The Lutheran (8.0%) and Catholic (10.0%) denomination families had the lowest self-reported frequencies of individuals within the "essential" group, while health-promoting denomination families had a higher frequency: Adventist (50.0%), Mormon (36.2%), Pentecostal (27.0%), and Holiness (25.0%). The frequency (%) of self-reported eating too much in the past week or mean vigorous exercise (# times) in past week did not appear to be higher in those denominations. Yet, with further inspection, those in the "essential" group tended to report a lower frequency of overeating than the "not essential" group in specific

denominations: Orthodox Christian (–41.7%), Pentecostal (–32.3%), Adventist (−22.2%), and Holiness (−19.0%). This effect was also seen in all "other" Protestant denominations group (−19.7%), and a possible trend within Baptists (−8.4%). Also, it was only the "essential" group of the health-promoting denominations who more openly promote and/or support healthy lifestyles that reported the lowest frequency of overeating: Pentecostal (27.3%), Orthodox Christians (33.3%), Anglican/Episcopal (37.5%), Holiness (42.9%), and Other (42.3%). All other denomination families had greater than 50% self-reporting overeating in the past week. There were two exceptions to the original hypothesis, with overeating in the "essential" group of the Adventist family was still quite high (55.6%), as was the Mormon family (84%) who was actually higher than the "not essential" group (difference = 15.8%). Similar trends were seen for mean vigorous physical activity (# times/week), with the largest difference being in Holiness (1.65), Methodist (1.48), Anglican/Episcopal (1.08), Orthodox Christian (0.53), and Other denomination families (1.15). Despite these trends, the variation in self-reported physical activity level was quite large across all denominations.

Discussion

The purpose of the present study was to describe and evaluate group differences between those who believed a healthy lifestyle by eating right and exercising regularly was "essential" versus "not essential" to what being a Christian/Catholic meant to them. We were drawn to this concept of essentiality, as it theoretically represents internalization of these health behaviors into one's religious values.

Internalization prevalence and disconnect

To our first aim, we found that a minority of self-professed Christians within this sample (16%) answered that they believed a healthy lifestyle by eating right and exercising was "essential" to what being a Christian meant to them. We also found that, although statistically significant, the relationship of self-reported vigorous exercise and internalization of a healthy lifestyle was weak, and in accord with other research reporting no significant relationship between religiosity and vigorous physical activity (Kim & Sobal, 2004). Similarly, the relationship of eating too much and internalization of a healthy lifestyle was weak, yet statistically significant, and was not a significant predictor of internalization (i.e. into "essential" group). These results support our ongoing hypothesis to the prevalence of the disconnect of healthy eating and physical activity behavior from current Christian values.

From a faith-based perspective, these results also further a theological perspective of religious beliefs and health behavior in Christians. For example, a core belief of Christianity is that the body is God's temple, to be honored and treated as holy (i.e. set apart, dedicated as sacred to God for a divine purpose). Yet, in alignment with previous findings (Faries et al., 2017), certain behaviors might be deemed more destructive to God's temple, and possibly more "sinful" than others. For example, in a sample of college students, religiosity has been found to be negatively correlated with alcohol consumption, illicit drug use, and smoking cigarettes, but *not* with exercise level or healthy nutrition habits (Mahoney, Carels, et al., 2005).

In accordance, Pew Research Center (2019) has found that a high percentage of religiously active adults in the United States do not currently smoke (85%), and avoid frequent drinking (96%). If we hold to an assumption that these behaviors were avoided or self-controlled within a limit of moderation due to religious beliefs and values (e.g. they destroy God's temple, they are sinful), then similar findings should be found with dietary intake and physical activity behaviors.

However, the same report revealed that only 64% of religiously active exercised several times per week, which coincides with previously discussed research findings (e.g. Bowie et al., 2017; Brown et al., 2014; Faries et al., 2017; Kim & Sobal, 2004; Mahoney, Carels, et al., 2005; Reeves et al., 2012), as well as other research that has found inconsistent or lack of meaningful relationships with religiosity and physical activity or healthy eating (Ansari et al., 2017; Kim & Sobal, 2004; Koenig, 2012; Watkins et al., 2013).

Internalization relationships and descriptors

Our second and third aims were directed at examining potential differences in assessed variables between the "essential" and "not essential" groups, as well as determining whether any assessed variables could predict classification of individuals in the "essential" group. Those who were more religious, as expressed by believing in God, reading scripture, praying, and volunteering at church had higher odds of internalizing healthy lifestyles (i.e. falling into the "essential" group). This finding was supported with both univariate and multivariate analyses (Tables 1 and 2).

As for interpretation, there is a reasonable explanation that those who are more religious have a more traditional view of the body in relation to how it should be cared for from a Biblical, Christian worldview (e.g. as God's temple, a member of Christ's body), thus being more likely to internalize the importance of living a healthy lifestyle, as is common with other unhealthy behaviors (e.g. not smoking, doing drugs, drinking alcohol). Similar relationships have been found with cross-sectional data (e.g. Pfeiffer et al., 2018), and with longitudinal data, where higher attendance at worship services and church activities at baseline was related to greater increases in fruit and vegetable consumption (Condrasky et al., 2013). However, relationships in the present study were not very strong, and the log regression model only accounted for 13% of the variance, leaving 87% of the variation in internalization of healthy lifestyle through healthy eating and exercise unaccounted for—a favorable opportunity for future research.

As for those in the "essential" group being a higher percentage of self-reported non-Hispanic Blacks, there is support that Black Americans are more likely to self-report being Christian and of a Protestant religion (Masci et al., 2018). There is also evidence to support the assertion of an interaction of race, religion and varying views in other areas, such as mental health, same-sex marriage, death penalty, and poverty (Bentley-Edwards et al., 2020; Bierman, 2006; Hunt, 2002; Payne, 2009; Sherkat et al., 2010). No other variables were able to help shed light on why self-reported Christians would (or would not) internalize a healthy lifestyle. Although speculative at this time, a few explanations are possible.

Proposed theoretical explanations

First, there could be a lack of knowledge and awareness of the destructive outcomes of dietary and physical inactivity behavior. With a poor diet being the leading risk factor for premature death in the United States, one could posit that if smoking is internalized into one's religious values (e.g. it is sinful, destructive to God's temple), then unhealthy diets could and should also be internalized following the same principle. However, the process behind internalization of certain behaviors, but not others, is largely unexplored. Future research could evaluate whether increasing awareness and knowledge in relation to one's Christian identity, values and worldview (or other spiritual/religious identity) is an effective approach for increasing internalization, motivation to change behavior, and sustainable behavior change.

Second, with this lack of awareness of the risks, the church culture can continue to partake in behaviors that have been traditionally accepted (e.g. serving unhealthy food at events or to

recruit new members), without threat to church affairs or one's religious beliefs. However, the powerful, positive effects of church culture have been illustrated with the phenomenon of cigarette smoking in Christians, which substantially reduced after prominent, public statements on the avoidance of smoking due to its conflict with Christian values (Faries, 2020; Southern Baptist Convention, 1984; U.S. Department of Health & Human Services, 2000). With insight from this history, a change in church culture, as it relates to (un)healthy eating, physical (in)activity and chronic disease might require a more substantial public, albeit bold statement from prominent church leadership.

Essentiality by denomination

To further investigation whether essentiality and health behavior (i.e. overeating, vigorous exercise) varied among denominations in line with proposed theoretical conceptions, denomination families that more openly endorse and support a healthy lifestyle (i.e. health-promoting denominations) were compared against other denominations available in the dataset (Table 3). While the overall internalization frequency for the entire sample was 16%, the "essential" group of health-promoting denomination families had higher self-reported frequencies: Adventist (50.0%), Mormon (36.2%), Pentecostal (27.0%), and Holiness (25.0%). However, visually inspecting the data, the frequency of overeating and vigorous exercise was not necessarily higher in those health-promoting denominations. Thus, consistent with previous findings (Faries et al., 2017), there appears to be a disconnect between self-reported beliefs of essentiality of a healthy lifestyle and actual healthy lifestyle behavior.

However, further inspection clarified that the potential effect of internalization on health behavior might only occur in those of the "essential" group within these health-promoting denominations. Specifically, "essential" group in these denominations reported lower frequency of overeating than the "not essential" group: Orthodox Christian (−41.7%), Pentecostal (−32.3%), Adventist (−22.2%), and Holiness (−19.0%). No meaningful difference was seen in other denominations (including Mormon family), with the exception of the "All Other" collection of denominational families. A similar trend was seen with vigorous exercise.

In summary, the initial findings support the hypothesis that those in denominations that are more often known to promote and support healthy lifestyles will have lower frequency of those self-reporting overeating and higher frequency of vigorous exercise than other denominations. However, this effect appeared to only be supported within those individuals who were a part of a health-promoting denomination *and* have internalized a healthy lifestyle ("essential" group). In other words, individuals who are a part of denominations who more recognizably express the importance of a healthy lifestyle as a part of their religious beliefs, *and* internalize this belief, might subsequently participate in and self-report healthier behavior. Such findings are preliminary and descriptive in nature with available data. Thus, the suggested interpretation of these results is speculative, even as they are in line with theoretical conceptions of internalization of health behaviors into religious beliefs. Future research should examine if these findings hold up in other samples, and particularly with clearer measurement of internalization across other health behaviors, including quality of dietary intake, quantity of fruit and vegetable consumption, and low-to-moderate physical activity.

Limitations

Certain limitations should be noted. While self-reporting how "essential" something is to one's values or view of self is conceptually consistent as a measure of internalization, such a distinction

might not have been the intent of the original Pew Research Center survey. The question is preceded by the expectation to, "tell me how *important* each of the following is to what being Christian/Catholic means to you." So, while the respondent might have known that "essential" suggested extremely important, they might not have been clear that it also suggests an absolute level of necessity, or as being fundamental to the nature of what being a Christian means to them (i.e. internalization).

Similarly, although consistent with other wording used in measures of integrated regulation, colleagues have pointed out that the word "essential" could be confusing in a religious sense, namely, interpreted as *required* for designation as a Christian, or a necessity for salvation or something that must be accomplished even if the environment or situation does not allow for it. These concerns are valid, and reemphasize the need for clearer assessments.

The present analyses were constrained to the cross-sectional nature of the survey, limiting inferences to causality. Moreover, the measures provided by the Pew Research Center were limited to single item, self-report questions for lifestyle behaviors. Thus, our ability was limited to more deeply explore proposed theoretical concepts that could be achieved with more detailed assessments of dietary intake and physical activity levels, as well as other health behaviors for comparison in the variation in internalization. Despite these limitations, the results provide an informative foundation for future questions and research on the role of internalization of health behavior into one's religious values, and faith-based interventions aimed at impacting positive health behavior change.

Conclusion

The present results from a secondary analysis of a Pew Research Center dataset revealed that a minority of self-reported Christians (16%) believed that living a healthy lifestyle by eating right and exercising was internalized into their religious values (i.e. "essential" to what being a Christian meant to them). These findings provide preliminary support for the theorized disconnect between internalization of certain health behaviors, particularly dietary intake and physical activity, into Christian values and identity—with possible variation between denominations that promote and support healthy lifestyles compared with those that do not. The present results also provide further foundation for future research and faith-specific interventions aimed at uncovering or influencing the role that individualized internalization of health behaviors, their religious beliefs and doctrine, and church culture on regulating those behaviors.

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ORCID iD

Mark D Faries https://orcid.org/0000-0001-9811-7984

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