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Unbelievable?! Theistic/Epistemological Viewpoint Affects Religion–Health Relationship

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Abstract Research suggests that Religion/Spirituality promotes a variety of positive health outcomes. However, despite reporting lower levels of Religion/Spirituality, non-believers report comparable levels of health to believers. The current study tested the hypothesis that Religion/Spirituality does not have a uniform effect on health for all persons, and tested theological/epistemological categories as moderators. Using the 2012 and 2014 General Social Survey ($N = 2670$), the relationship between Religion/Spirituality and happiness and self-rated health was investigated. Results indicated that Gnostic Theists experienced Religion/Spirituality more positively than their peers did; Agnostic Theists experienced Religion/Spirituality less positively than their peers did; and Negative Atheists experienced Religion/Spirituality less positively than their peers did. These findings suggested that Religion/Spirituality is not associated with salutary effects for all persons, and that whether a person believes in god(s) and how confident he/she was in god(s)' existence, influenced his/her experience with Religion/Spirituality.

Keywords Atheism · Theism · Gnosticism · Agnosticism · Happiness · Health · General Social Survey · Statistical moderation

Introduction

The literature describing Religion/Spirituality (R/S) and health has found that R/S is linked to a variety of positive health outcomes (Johnstone et al. 2007; Koenig and Larson 2001). Generally, it has been established that attending church (Levin and Chatters 1998; Okulicz-Kozaryn 2010; Strawbridge et al. 2001), praying (Levin and Chatters), and/or self-reported

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religiosity (Gauthier et al. 2006; Horning et al. 2011; Levin and Chatters) positively predict subjective well-being. While these R/S constructs (attendance, prayer, and religiosity) are well represented within the existing literature, the field as a whole is far from monolithic in its outlook.

Whereas R/S constructs are reasonably consistent predictors of health outcomes, there are aspects of R/S that have uncertain relationships with health outcomes. One noteworthy lacuna is the relationship between belief in god(s) and health outcomes. Some research has found that persons who believe in god(s) report better health than their non-believing counterparts do (Ekedahl and Wengström 2010; Rosmarin et al. 2013). This positive relationship has been attributed to the protective influence of R/S, or greater confidence in medical outcomes. However, population-level research has revealed few differences between the religious/irreligious or believers/non-believers in terms of health outcomes (Baker and Cruickshank 2009; Mochon et al. 2011; Speed and Fowler 2016).

The lack of congruence between R/S constructs predicting health and belief in god(s) predicting health is not paradoxical, but it is unexpected for several reasons. First, measurements of spirituality frequently identify theism [a belief in god(s)] as indicating higher spirituality (Monod et al. 2011), and the literature is fairly united on spirituality being an important promoter of subjective well-being (O'Connell and Skevington 2010). All things being equal, one may expect that believers would report better health outcomes than non-believers. Second, as noted before, R/S constructs are firmly linked with salutary outcomes and the irreligious report substantially lower levels of R/S constructs than their religious counterparts do (O'Brian-Baker and Smith 2009). Again, all things being equal, one may reasonably expect a health disadvantage to the irreligious (frequently encompassing non-believers). In short, there are several reasons to suspect that non-believers would report poorer health than believers do, but these relationships do not appear to emerge with any regularity.

A potential explanation for this discrepancy is that the rationale guiding it is working, in part, off of a flawed assumption. While the current literature has repeatedly found a salutary relationship between R/S constructs and health outcomes, there has been a muted effort within the literature to test whether this relationship is moderated by what a person believes (Speed and Fowler 2016). Researchers routinely ignore the possibility that beliefs about god(s) may affect the R/S–health relationship. The tacit assumption of much of the R/S–health literature is that the salutary effects of R/S constructs are invariant across beliefs. In fact, a large amount of literature has investigated R/S and health without attempting to determine whether belief influences that relationship (e.g., Clark et al. 1999; Ellison et al. 2001; Hayward and Krause 2014). In other words, the benefits of attending church, praying, or religiosity are assumed to equally benefit both believers and non-believers alike. This assumption is peculiar given that this researcher could not find a single study that suggested that going to church, or religiosity, or praying was *inherently* healthy. In fact, aspects of the existing literature would suggest quite the opposite is true (Johnstone et al. 2007).

Why R/S is linked to salutary outcomes is a topic of some debate within the literature. Researchers have proposed that R/S promotes health specifically through building coping skills, promoting social support, encouraging healthy lifestyle choices, or increasing one's autonomy (George et al. 2002; Johnstone et al. 2007). A broader, overlapping explanation to account for the R/S–health relationship is the coherency hypothesis. This explanation would proffer that persons, who perceive their world as stable or internally coherent, tend to be healthier (Idler 1987). The coherency hypothesis is applicable to the general health psychology field, but in this specific case, R/S allows a person to make "better sense" of

his/her world and this improves subjective well-being (Idler 1987; Johnstone et al. 2007). This explanation is plausible and research has confirmed that persons, when faced with a difficult life events, may indeed assume it is part of "God's plan" (Pargament and Hahn 1986). It is reasonable to suggest that several findings within the R/S–health literature could be understood by invoking the coherency hypothesis framework.

However, while the coherency hypothesis is applicable to numerous R/S–health relationships, it is critical to understand that it does not suggest that R/S constructs are inherently beneficial. The logic underlying the coherency hypothesis is that persons benefit from R/S constructs because they have an underlying valuation of R/S constructs. This theoretical framework would suggest that a valuation of an R/S construct, combined with its practice, was responsible for the observed salutary relationship. While one could argue that the presence of an R/S construct implies its valuation, this rationale is somewhat flawed. A person may attend church due to familial obligations, or perceive themselves as religious for non-religious reasons (e.g., a "cultural Jew" or a "cultural Catholic"), or engage in prayer due to social pressures. In short, the presence of R/S constructs should not be construed to mean that those R/S constructs are valued. Therefore, a potentially furtive research topic is to determine an approach that provides an indication as to whether a person engaging in R/S constructs, has an underlying valuation of those beliefs/behaviors.

An approach that may be fruitful is to use R/S identities as moderators for the relationship between R/S constructs and health outcomes. Research from Dezutter et al. (2011) indicated that persons seeking to gain pain-relief from prayer were successful, but only if they were members of a religious group. Dezutter et al. (2011) illustrated that the relationship prayer had with pain-relief was moderated by religious affiliation. While a similar approach could be used for the current study, the religiously unaffiliated represent a heterogeneous group (Hackett 2014), which may result in a weak manipulation. An R/S identity that shows promise is whether a person believes in god(s) (Speed and Fowler 2016). However, Speed and Fowler (2016) focused their manipulation on belief, while the current study paid equal attention to belief and *certainty* of that belief.

Theoretical Framework for the Current Study

The current study is primarily focused on the relationship that theology (i.e., belief) and epistemology (i.e., knowledge/confidence or certainty in a belief) have in moderating the relationship between R/S constructs and health outcomes. Both of these topics will be discussed at some length, due in part to the potential for ambiguity (Hwang et al. 2011).

Belief

For this study, belief refers to how a person responds when asked the theological question, "Do you believe in god(s)?". Responses to this question form a logical binary; a person either believes in god(s) or does not believe in god(s) (i.e., A vs. not A). These two responses are exhaustive and mutually exclusive—persons who believe in god(s) are theists, and persons who do not believe in god(s) are atheists. Theism only means a person believes in god(s), and this does not restrict itself to monotheism. Consequently, theism encompasses broad conceptualizations of higher powers, which is inclusive of deism. Generally, theism is the *positive* position that a god or gods exist (Hibberd 2009). Consequently, anyone who would not accept the claim that god(s) exist, is definitionally an atheist.

Technically, the form of atheism addressed in the current study is called negative atheism; a person is an atheist simply because he/she does not hold a belief that god(s) exist. In contrast, positive atheism is the belief that there are no god(s). Persons who are negative atheists would not necessarily indicate that they believed there was no god(s), only that they do not believe that there is a god(s). This distinction often gets lost within the literature, so it helps to explicitly state it. Negative atheism is essentially *a failure to accept the claim that god(s) exist*, while positive atheism is *the claim that there are no god(s)* (Peterson 2013). Atheism and theism only address belief, but do not address an equally important question: How certain a person is with his/her belief.

Knowledge

A topic that is often conflated with belief is knowledge. In the current study, the term "knowledge" refers to whether a person is certain or uncertain of god(s)' existence. Knowledge can be treated as a logical binary; a person either has knowledge or does not have knowledge. People who indicate that they know (or are certain) of whether god(s) exist or do not exist, are classified as "gnostic." This is because they have made a knowledge claim. In contrast, persons who report being uncertain whether god(s) exist would be classified as being "agnostic." This study recognizes that agnosticism and gnosticism are being used in a broader context than what is typically allotted for them. It is common for a person to remove himself or herself from the theist/atheist binary and instead identify as agnostic. However, agnosticism offered as a response to the question, "Do you believe in god(s)?", is somewhat of a non-sequitur. Generally, agnosticism is the position that: A person does not know whether god(s) exist, cannot know whether god(s) exist, and/or does not know whether or not they believe god(s) exist (Benn 1999). Functionally, a person is giving an indication of what they claim to know, as opposed to what they believe. As can be seen in Table 1, atheism and agnosticism are *not* mutually exclusive positions. It is also important to note that theists, that is, persons who believe in god(s), can also be gnostic and agnostic. Gnosticism and agnosticism only refer to the certainty a person feels in regard to atheism/theism. Confident believers and confident non-believers would *both* be gnostic, while less confident believers and non-believers would *both* be agnostic.

The distinction between atheism and agnosticism can be illustrated with the parallel question, "Do you believe that your grandparents' house is on fire?". Many would likely answer, "No," but would then add, "…but I do not know if it is." This is because it is

Table 1 Distinguishing between atheism/theism and agnosticism/gnosticism

	Theological Question: "Do you believe in god(s)?"	
	Theist	Atheist
Epistemological Question: "Do god(s) exist?"		
Gnostic	Gnostic/Theist: I believe in god(s), and god(s) exist	Gnostic/Atheist: I do not believe in god(s), and god(s) do not exist
Agnostic	Agnostic/Theist: I believe in god(s), and I am unsure if god(s) exist	Agnostic/Atheist: I do not believe in god(s), and I am unsure if god(s) exist

possible to hold a belief without a corresponding claim of knowledge. If a person is asked, "Do you believe in god(s)?" and they respond with, "I do not know if god(s) exist," then they are not actually addressing the theological question put to them. They are indicating what they *know* as opposed to what they *believe*. This distinction is not always evident because knowledge is a subset of belief—a person can only be certain of things that they believe. Granted, persons may identify as agnostic because they do not know what they believe, and while this is a perfectly valid position to take, it does not omit them from the atheist/theist binary. Because these persons would not aver the positive claim of belief, they would be categorized as (negative) atheists on that basis (Bullivant 2013).

Previous Research

Unfortunately, there has been little research addressing the relationship between belief/knowledge and health outcomes. A notable exception to this was Galen and Kloet (2011), who reported a curvilinear relationship between a certainty in god(s)' existence/non-existence and health outcomes. Galen and Kloet combined a measure of belief and knowledge together for a single scale. They found that gnostic atheists and gnostic theists (at the two extremes of the scale) were healthier than their agnostic counterparts were (who were in the middle of the scale). Essentially, Galen and Kloet (2011) found that atheists and theists were comparable in health outcomes, but certainty (i.e., knowledge) played a substantive role in predicting health outcomes. Speed and Fowler (2016) addressed belief as a potential moderator for health outcomes, and found that the relationship between R/S and health was moderated by atheist identity. Critically though, Speed and Fowler (2016) did not substantively address epistemology as a parallel construct.

The Current Study

Whereas Galen and Kloet (2011) examined the relationship between a belief/knowledge continuum and health outcomes, the current study will be using belief/knowledge categories as moderators of the experience of R/S predicting health. While Speed and Fowler (2016) laid the theoretical groundwork for this manipulation in their research, they only tested a narrow definition of atheism as a potential moderator. The goal of the current study is to use categories of belief *and* knowledge as potential moderators for the relationship between R/S constructs and health outcomes. Functionally, this approach will incorporate the research of Galen and Kloet (2011) into an approach that was similar to Speed and Fowler (2016). This approach may help to resolve why non-believers tend to be as healthy as believers are, despite reporting lower levels of R/S.

Methods

Participants

The researcher accessed the 2012 and 2014 General Social Survey (GSS) gathered by the National Opinion Research Center (NORC) at the University of Chicago (Smith et al. 2015). The GSS years were chosen because they had items that were related to both R/S and health outcomes. The GSS typically has a response rate of approximately 70 %, and

provided weighting options that adjusted analyses for non-response rates (which were utilized by the current study).

To be included in the current study respondents had to provide responses to all covariates of interest and at least one of the dependent variables. Respondents replying to questions with, "I don't know" or who refused to provide a response to a question of interest, were eliminated from the sample in order to maintain the continuous nature of the data. The dataset had 4512 persons; however, not all respondents completed all questions (the GSS is modular). The smallest sample the current study worked with was $n = 2670$ (please see Table 2), and was of 53 % female with the average age of 46.36 (SD = 16.73).

Measures

Demographics

The GSS contained a range of covariates that the researcher included within analyses: sex, age, ethnicity (white, black, or other), marital status, education (less than high school, high school, junior college, Bachelor's degree, or graduate degree), family's income in constant dollars, region (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, or Pacific), and survey

Table 2 Weighted descriptive statistics for select variables (% or M/SD)

	Belief categories				
	Entire sample $N = 2670$ 100 %	Negative Atheists $n = 246$ 9.21 %	Deists $n = 337$ 12.62 %	Agnostic Theists $n = 522$ 19.55 %	Gnostic Theists $n = 1565$ 58.61 %
Religiously affiliated (yes)	79.81 %	23.10 %	54.89 %	82.18 %	93.29 %
Sex (female)	53.02 %	34.57 %	50.45 %	48.02 %	58.18 %
White	73.65 %	86.67 %	79.82 %	81.69 %	67.45 %
Black	14.35 %	4.04 %	5.66 %	8.67 %	19.86 %
Other	12.00 %	9.30 %	14.52 %	9.64 %	12.69 %
Married	54.37 %	46.10 %	46.58 %	52.78 %	57.92 %
Widowed	4.63 %	1.49 %	3.53 %	2.34 %	6.15 %
Divorced	11.96 %	11.33 %	13.50 %	11.33 %	11.94 %
Separated	2.79 %	1.64 %	2.58 %	2.84 %	3.00 %
Never married	26.26 %	39.44 %	33.81 %	30.71 %	21.00 %
Self-rated health	2.97/0.84	3.04/0.79	3.05/0.84	3.00/0.83	2.93/0.85
Happiness	2.22/0.64	2.13/0.60	2.17/0.64	2.21/0.64	2.25/0.65
Age	46.36/16.73	42.17/16.63	43.88/16.35	43.47/16.57	48.58/16.55
Education	1.64/1.22	2.03/1.26	1.92/1.26	1.68/1.23	1.50/1.18
Income	5.39/3.28	6.24/3.35	5.83/3.35	5.78/3.42	5.02/3.15
R/S index	10.98/4.79	4.61/2.58	6.94/3.59	9.28/3.64	13.45/3.77

The $N = 2670$ reflects the number of persons who answered all items of interest

year (2012 or 2014). These covariates were chosen due to their relationship with the health outcomes or because they were correlated with R/S.

Religious/Spiritual Index

A noteworthy issue within the R/S–health research is that conceptualizations of R/S tend to vary substantially across studies. The current study used typical, albeit non-exhaustive, assessments of R/S in order to be relatable to the existing literature. The GSS asked a series of questions related to Attendance [nine-point ("How often do you attend religious services?")], Prayer [six-point ("How often do you pray?")], and Religiosity [four-point ("To what extent do you consider yourself a religious person?")]. While using individual R/S constructs is a feasible method to investigate R/S, the researcher instead elected to use a composite R/S index. Using an R/S index is arguably better than using individual R/S predictors because point estimates for indices are more stable than point estimates for individual R/S constructs. This improved stability is due to random error having a diminished influence on point estimates.

Because of the conceptual overlap of the R/S constructs, the researcher investigated multicollinearity as a potential issue. However, variance inflation factor (VIF) did not exceed 2.00 for R/S constructs suggesting that the variables were adequately orthogonal (i.e., VIF for Attendance = 1.61, VIF for Prayer = 1.74, and VIF for Religiosity = 1.80) (Field and Andy 2009). An exploratory factor analysis was conducted, and all three items were part of a single factor that loaded between 0.69 and 0.75. The researcher then investigated reliability using Cronbach's α, which revealed an acceptable level of reliability of the scale (Cronbach's $\alpha = 0.71$). Overall, the R/S index possessed good psychometric properties.

Belief/Knowledge Categories

To assess this topic, the researcher focused on what a person reported believing and their claims of certainty. The GSS had a single question "…which statement comes closest to expressing what you believe about God." There were six valid responses to this question: (1) I don't believe in God; (2) I don't know whether there is a God and I don't believe there is any way to find out; (3) I don't believe in a personal God, but I do believe in a higher power of some kind; (4) I find myself believing in God some of the time, but not at others; (5) While I have doubts, I feel that I do believe in God; and (6) I know God exists and I have no doubts about it.

Based on their responses to this question, the researcher used an a priori classification scheme that divided persons into one of four categories:

Negative Atheists Persons who answered with either: (1) I don't believe in God; or (2) I don't know whether there is a God and I don't believe there is any way to find out, were grouped together. The reason for placing these persons in the same category was that neither group would endorse the statement, "I believe in god(s)." In other words, this category has grouped all negative atheists together. This definition is consistent with previous research on the topic (Hwang 2008; O'Brian-Baker and Smith 2009). Unfortunately, these response categories did not provide an indication of certainty, meaning that negative atheists included both gnostics and agnostics.

Deists Persons who answered the question with, "I don't believe in a personal God, but I do believe in a higher power of some kind," were classified as Deists in the current study. A deist is a person who holds a theistic belief [i.e., believes in god(s)], but that being does not interact with anyone. This type of theism has become increasingly associated with more spirit-centered movements (e.g., New Age) (Farias and Lalljee 2008). Unfortunately, these response categories did not provide an indication of certainty, which means Deists would include both gnostics and agnostics.

Agnostic Theists Respondents who answered the question with, "I find myself believing in God some of the time, but not at others" or "While I have doubts, I feel that I do believe in God," were classified as Agnostic Theists. These individuals obviously believed in god(s), but seemed to have doubts or uncertainties that he/she/it existed.

Gnostic Theists Respondents who indicated that, "I know God exists and I have no doubts about it" were described as Gnostic Theists in the current study. These persons were easily the largest group of people with $\sim$60 % of the total sample.

Self-Rated Health

Like in other studies (Green and Elliott 2010; Krause 2006), self-rated health (SRH) was assessed with a single item ("Would you say your own health, in general, is excellent, good, fair, or poor?"). Single-item measures of SRH have been shown to have good predictive validity and test–retest reliability (Kuhn et al. 2006). Self-rated health was reverse coded so that higher scores reflected greater health.

Happiness

Respondents were asked to place themselves into a category of happiness with a single-item measure, "Taken all together, how would you say things are these days—would you say that you are very happy, pretty happy, or not too happy?". This happiness measure was the same used by Park et al. (2013).

Data Analysis

All data analysis was done with Stata 13, and all tables and figures were made with Excel 2013. All data analysis used weighted data for model estimates as per the instructions for the American GSS. All regression models used linearized standard error in their estimates. This correction was necessary in both logistic and linear models as non-simple random sampling was used (and thus systematic variance would be inflated). This correction also addressed concerns over heteroscedasticity in the linear models (Long and Ervin 2000), something that is rarely noted within the existing literature. Because survey weights were used in the current model, indicators of effect size for logistic models (i.e., pseudo-R^2) were not generated because the underlying assumptions for its calculation did not hold. Finally, Stata does not have the capacity to generate survey weighted correlation tables, and while unweighted data could be used to create correlation tables, their analytic provenance would be questionable and were therefore excluded in its entirety.

Hypotheses

The existing literature would suggest that R/S is positively related to both happiness (Mochon et al. 2011; Park et al. 2013) and subjective well-being (Green and Elliott 2010; Krause 2006).

Hypothesis 1a The R/S index will be associated with a greater likelihood of being in the highest level of happiness ("Very happy"), instead of the lowest level of happiness ("Not too happy").

Hypothesis 1b The R/S index will be a significant and positive predictor of self-rated health (SRH).

Galen and Kloet (2011) found that agnostic groups tended to score worse than their gnostic counterparts on measures of well-being. Moreover, it seems plausible that persons who are unsure of god(s)' existence are less likely to see valuation in activities comprising the R/S index.

Hypothesis 2a Being an Agnostic Theist will *negatively* moderate the relationship between the R/S index and the highest level of happiness.

Hypothesis 2b Being an Agnostic Theist will *negatively* moderate the relationship between the R/S index and SRH.

Galen and Kloet (2011) found that gnostic groups to score the highest on their measures of well-being. Moreover, under the rationale of the coherency hypothesis, this researcher would expect that the highest level of valuation of the R/S index to come from persons who were Gnostic Theists.

Hypothesis 3a Being a Gnostic Theist will *positively* moderate the relationship between the R/S index and the highest level of happiness.

Hypothesis 3b Being a Gnostic Theist will *positively* moderate the relationship between the R/S index and SRH.

It is unclear how certain Negative Atheists and Deists were in their respective beliefs. Consequently, it is unclear as to how the R/S index would be experienced. While the current study bears resemblance to Speed and Fowler (2016) which found that atheists experience subjective Religiosity negatively in regard to SRH, given that a different measure of R/S was used and a different definition of atheism was used, it is unclear whether these results would be applicable in the current study. As for the Deist group, there is very little research or theoretical rationale to justify how they would experience the R/S index.

Exploratory Hypothesis

Does being a Negative Atheist or a Deist moderate the experience of the R/S variable for either happiness or for SRH?

Table 3 Belief categories and R/S index predicting happiness category in a hierarchical multinomial logistic regression

	Relative risk ratios/95 % confidence intervals				
	Block 1	Block 2	Block 4b	Block 4c	Block 4d
"Pretty happy" (1) versus base (0)					
Constant	4.66 [3.38, 6.42]***	4.90 [3.37, 7.11]***	6.14 [2.17, 17.36]**	6.05 [2.18, 16.77]**	7.39 [2.57, 21.23]***
Negative Atheist (base)					
Deist	0.99 [0.61, 1.60]	1.01 [0.63, 1.63]	1.64 [0.77, 3.50]	0.93 [0.58, 1.49]	1.00 [0.61, 1.61]
Agnostic Theist	1.04 [0.69, 1.57]	1.09 [0.73, 1.63]	1.08 [0.70, 1.68]	1.57 [0.75, 3.29]	1.25 [0.82, 1.92]
Gnostic Theist	0.98 [0.69, 1.40]	1.08 [0.69, 1.70]	1.23 [0.74, 2.03]	1.27 [0.79, 2.05]	0.90 [0.46, 1.77]
R/S index		0.99 [0.96, 1.02]	0.99 [0.96, 1.03]	0.99 [0.96, 1.03]	0.96 [0.91, 1.01]
Deist × R/S index			0.92 [0.84, 1.02]		
Agnostic Theist × R/S index				0.96 [0.90, 1.03]	
Gnostic Theist × R/S index					1.05 [0.99, 1.11]
"Very happy" (1) versus base (0)					
Constant	1.82 [1.27, 2.59]**	1.46 [0.97, 2.19]	1.68 [0.51, 5.56]	1.47 [0.44, 4.94]	2.41 [0.72, 8.00]
Negative Atheist (base)					
Deist	1.25 [0.74, 2.12]	1.13 [0.66, 1.93]	1.73 [0.69, 4.36]	1.00 [0.57, 1.75]	1.22 [0.69, 2.18]
Agnostic Theist	1.32 [0.82, 2.13]	1.07 [0.66, 1.74]	1.12 [0.65, 1.91]	3.50 [1.43, 8.54]**	1.53 [0.86, 2.73]
Gnostic Theist	1.73 [1.16, 2.57]**	1.17 [0.70, 1.94]	1.51 [0.85, 2.67]	1.31 [0.76, 2.25]	0.68 [0.32, 1.44]
R/S index		1.05 [1.01, 1.09]*	1.04 [1.00, 1.08]	1.06 [1.02, 1.10]**	0.97 [0.91, 1.03]
Deist × R/S index			0.93 [0.84, 1.04]		
Agnostic Theist × R/S index				0.88 [0.81, 0.95]**	
Gnostic Theist × R/S index					1.11 [1.04, 1.19]**

Base (0) = "Not too happy." R/S index = Religious/Spiritual index. Block 4b, Block 4c, and Block 4d each controlled for sex, age, race, marital status, education, income, region, and survey year

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

Results

Happiness

A hierarchical multinomial logistic regression model was used to investigate the relationship between happiness, belief/knowledge categories, the R/S index, and demographic covariates ($n = 4000$). Happiness was regressed onto belief/knowledge categories in Block 1, $F(6, 131) = 3.92$, $p = .001$, and the overall model was improved. Generally, belief/knowledge categories did not significantly predict membership in the "Pretty happy" or "Very happy" categories, relative to the base category (i.e., "Not too happy"). The R/S index was added to the model in Block 2, $F(2, 131) = 12.48$, $p < .001$, and it significantly improved the overall model. However, the impact the R/S index had was isolated to predicting membership in the "Very happy" category, $RRR = 1.04$, $p = .020$, 95 % CI [1.01, 1.09]. Hypothesis 1a was supported by this finding.

Belief/Knowledge Categories as Moderators

At this stage, the researcher investigated whether the relationships between the R/S index and happiness were moderated by belief/knowledge categories (i.e., Negative Atheist, Deist, Agnostic Theist, and Gnostic Theist). Using a forward stepwise regression approach, the researcher assessed four interaction terms that individually described the moderating role of a belief category on the relationship between the R/S index and happiness.

Agnostic Theists When investigating the interaction term related to Agnostic Theists, the overall model significantly improved in Block 3c, $F(2, 131) = 5.97$, $p = .003$. In this case, the interaction term predicted that Agnostic Theists reporting higher scores on the R/S index would be more likely to be in the "Not too happy" group rather than in the "Very happy," $RRR = 0.90$, $p = .008$, 95 % CI [0.83, 0.97]. When demographic covariates were entered in Block 4c, $F(38, 131) = 9.40$, $p < .001$, the interaction term remained

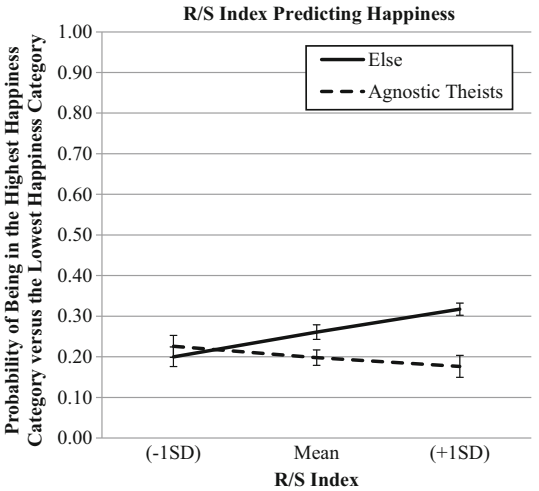

Fig. 1 Religious/Spiritual index predicting membership in the "Very Happy" category as opposed to the "Not too happy" category (with standard error bars)

significant, $RRR = 0.88$, $p = .001$, 95 % CI [0.81, 0.95] (please see Table 3 and Fig. 1). Hypothesis 2a was supported by this finding.

Gnostic Theists The researcher then investigated the interaction term relevant to Gnostic Theists, $F(2, 131) = 8.18$, $p < .001$, in Block 3d. These results suggested that persons who were Gnostic Theists and reported higher scores on the R/S index were more likely to be in the "Very happy" group, $RRR = 1.14$, $p < .001$, 95 % CI [1.07, 1.22], or the "Pretty happy" group, $RRR = 1.06$, $p = .026$, 95 % CI [1.01, 1.12], relative to the "Not too happy" group. The researcher assessed how robust these interactions were by adding demographic covariates in Block 4d, $F(38, 131) = 9.26$, $p < .001$. The interaction term for the "Very happy" group remained significant, $RRR = 1.11$, $p = .002$, 95 % CI [1.04, 1.19], while the interaction term for the "Pretty happy" group was no longer a significant predictor (please see Table 3 and Fig. 2). Hypothesis 3a was supported by this finding.

Negative Atheists The interaction terms for Negative Atheists were non-significant, $F(2, 131) = 0.10$, $p = .905$. This would suggest that Negative Atheists did not significantly differ in their experience of the R/S index, please see the Discussion.

Deists When investigating the interaction term pertaining to Deists, the overall model did not significantly improve in Block 3b, $F(2, 131) = 2.77$, $p = .067$. Despite this, Deists reporting higher levels of the R/S index were less likely to be in the "Pretty happy" category rather than in the "Not too happy" category, $RRR = 0.90$, $p = .023$, 95 % CI [0.82, 0.99], or more likely to be in the "Not too happy" category rather than in the "Very happy" category, $RRR = 0.90$, $p = .042$, 95 % CI [0.81, 0.99]. When demographic covariates were added in Block 4b, $F(38, 131) = 9.47$, $p < .001$, neither of these interaction terms remained significant. Overall, this would suggest that the relationship that Deists report in regard to the R/S index and happiness was subordinated to demographic covariates (please see Table 3).

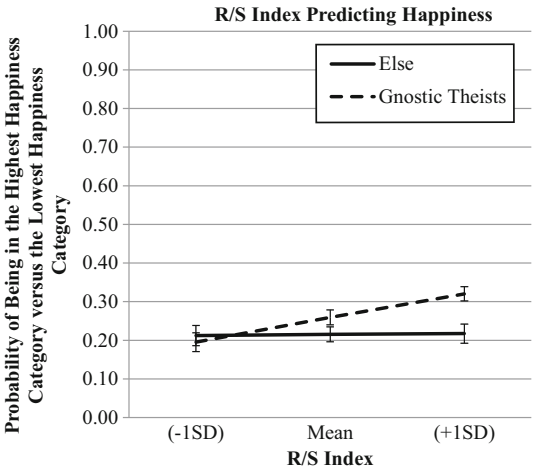

Fig. 2 Religious/Spiritual index predicting membership in the "Very Happy" category as opposed to the "Not too happy" category (with standard error bars)

Self-Rated Health

A hierarchical linear regression model was used to investigate the relationship between self-rated health (SRH), belief/knowledge categories, the R/S index, and demographic covariates ($n = 2678$). Self-rated health was regressed onto belief/knowledge categories in Block 1 of the regression model, $F(3, 131) = 2.94$, $p = .036$, $R^2 = .004$, and the model significantly improved. The researcher then included the R/S index in Block 2, $F(1, 131) = 2.50$, $p = .116$, $\Delta R^2 = .002$, $R^2 = .005$, but this did not significantly improve the overall model. Hypothesis 1b was not supported.

Belief/Knowledge Categories as Moderators

The four belief/knowledge categories (i.e., Negative Atheist, Deist, Agnostic Theist, and Gnostic Theist) were investigated as moderators for the R/S index.

Agnostic Theists The interaction term for Agnostic Theists was non-significant, $F(1, 131) = 0.00$, $p = .967$. Agnostic Theists did not experience the R/S index differently from the remaining participants. Hypothesis 2b was not supported.

Gnostic Theists The interaction term for Gnostic Theists was investigated in Block 3d, $F(19, 131) = 4.19$, $p < .001$, $\Delta R^2 = .002$, $R^2 = .008$, significantly improving the overall model. The results would suggest that while persons who were not Gnostic Theists tended to report a non-significant relationship between the R/S index and SRH, Gnostic Theists appeared to experience modest salutary effects, $B = .02$, $p = .043$, 95 % CI [0.00, 0.05] (see Fig. 3). However, when demographic covariates were entered in Block 4d, $F(19, 131) = 13.67$, $p < .001$, $\Delta R^2 = .118$, $R^2 = .126$, the interaction term was reduced to non-significance, $B = .02$, $p = .097$, 95 % CI [−0.00, 0.03] (see Table 4). Hypothesis 3b was partially supported.

Deists The interaction term for Deists was non-significant, $F(1, 131) = 2.95$, $p = .088$. This would suggest that Deists did not experience the R/S index differently from persons not in their group.

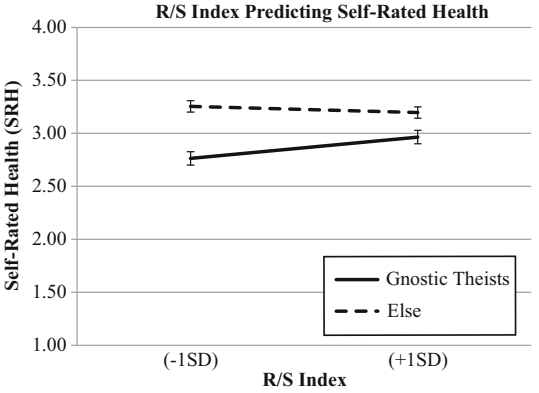

Fig. 3 Religious/Spiritual index predicting self-rated health (with standard error bars). The "Else" line used the average coefficients for Negative Atheists, Deists, and Agnostic Theists

Table 4 Belief categories and R/S index predicting self-rated health in a hierarchical linear regression

	B coefficients/linearized standard error					
	Block 1	Block 2	Block 3a	Block 4a	Block 3d	Block 4d
Constant	3.040/.050***	2.998/.054***	3.187/.102***	3.025/.153***	3.064/.062***	3.004/.124***
Negative Atheist (base)						
Deist	.009/.064	−.013/.067	−.215/.123	−.051/.115	.02/.069	.045/.067
Agnostic Theist	−.039/.063	−.082/.071	−.288/.126*	−.083/.120	−.015/.078	.037/.074
Gnostic Theist	−.116/.055*	−.197/.081*	−.412/.143**	−.102/.137	−.376/.112**	−.147/.106
R/S index		.009/.006	.011/.006	.008/.006	−.005/.009	−.003/.008
Negative Atheist × R/S index			−.043/.021*	−.016/.018		
Gnostic Theist × R/S index					.023/.011*	.016/.009
Sex (male/female)				.032/.041		.032/.041
Age				−.009/.001***		−.009/.001***
White (base)						
Black				.013/.054		.014/.054
Other				.055/.059		.057/.059
Married (base)						
Widowed				.103/.072		.105/.072
Divorced				−.016/.050		−.015/.050
Separated				−.114/.092		−.112/.092
Never married				−.065/.050		−.065/.050
Education				.111/.016***		.111/.016***
Family income				.050/.007***		.050/.007***
Survey year (2012/2014)				−.049/.032		−.048/.032
$\Delta R^2/R^2$	.004/.004*	.002/.005	.002/.007*	.118/.125***	.002/.008*	.118/.126

Region was included as a covariate in Block 4a and Block 4d, but was omitted in the table due to space constraints

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

Negative Atheists Researchers first investigated the Negative Atheist interaction term in Block 3a, $F(1, 131) = 4.17$, $p = .043$, $\Delta R^2 = .002$, $R^2 = .007$, which significantly improved the model. The interaction term indicated that Negative Atheists reporting higher levels of the R/S index reported lower levels of SRH, $B = -.04$, $p = .043$, 95 % CI [−0.08, −0.00] (see Fig. 4). However, when demographic covariates were entered in

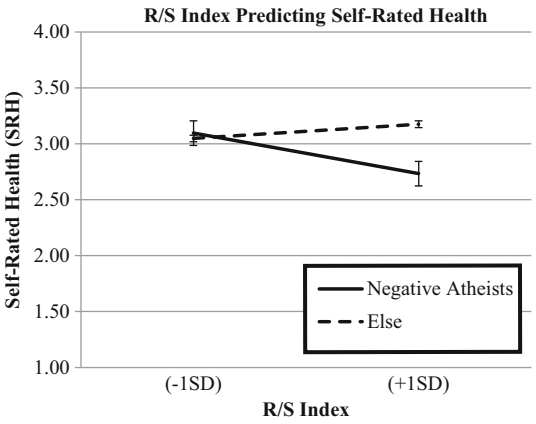

Fig. 4 Religious/Spiritual index predicting self-rated health (with standard error bars). The "Else" line used the average coefficients for Deists, Agnostic Theists, and Gnostic Theists

Block 4a, $F(19, 131) = 13.48$, $p < .001$, $\Delta R^2 = .118$, $R^2 = .007$, the Negative Atheist × R/S index term was reduced to non-significance, $B = -.02$, $p = .396$, 95 % CI [−0.05, 0.02] (see Table 4).

Discussion

The current study contributed to the existing literature in several ways. First, it examined the relationship between belief and certainty using national-level data. Results suggested that when controlling for covariates, theistic viewpoint and epistemological viewpoint *in isolation*, did not significantly predict happiness or SRH. Second, the relationship between the R/S index and health outcomes was shown to be partially dependent on *combined* theological and epistemological perspectives. When statistical moderation occurred, higher levels of the R/S index were beneficial to Gnostic Theists, while higher levels of the R/S index were negative for groups other than Gnostic Theists. These results are telling, as they would suggest that the R/S index does not have a simple linear relationship with health outcomes. The implications of these findings will now be discussed.

Belief/Knowledge Categories as Moderators

The major finding of the current study was that theological and epistemological positions influenced the relationship between the R/S index and health outcomes. The relationship between R/S and health was not a straightforward situation in which "more R/S is healthier." When examining only the R/S index, the research found that the R/S index did not significantly predict membership in the "Pretty happy" category, but did predict membership in the "Very happy" category (relative to the "Not too happy" category). If the current study had ceased investigation at that point, the researcher could have validly concluded that higher levels of the R/S index were indeed associated with greater levels of happiness. However, when the researcher investigated potential moderator terms, the relationship between the R/S index and happiness became substantially more nuanced.

Agnostic Theists indicated that the R/S index, rather than being a significant positive predictor of membership in the "Very happy" category, was actually a significant *negative* predictor. The results revealed that moving one unit on the R/S index resulted in a 12 %

decreased risk that a person would be in the "Very happy" category compared to the "Not too happy" category. However, for Gnostic Theists, increasing the R/S index by one unit increased the risk of being in the "Very happy" category by ~11 %. Even though both Agnostic Theists and Gnostic Theists believed in god(s), the relationship between the R/S index and happiness was actually directionally different. These findings illustrate the role that certainty plays within the experience of R/S—considering belief and certainty in tandem provided valuable information as to how the R/S index predicted happiness.

While the R/S-happiness relationship was moderated by Deist identity, this relationship did not persist with the inclusion of covariates. One may find it surprising that Negative Atheists and Deists did not report a moderated relationship between the R/S index and happiness categories; however, it is important to acknowledge that neither of these groups actually addressed an epistemological question. These categories dealt exclusively with belief; Negative Atheists did not believe in god(s), and Deists believed in a non-personal version of god(s). It may be the case that gnosticism and agnosticism affect either category, but unfortunately there was inadequate information provided within the GSS to make that assessment.

In regard to self-rated health (SRH), the R/S index seemed to play a largely muted role in the prediction of health. In Block 2 (see Table 4), the R/S index was a non-significant predictor of SRH. However, when using belief/knowledge categories in Block 3, the relationship between the R/S index and SRH changed substantially. For Negative Atheists, moving up one SD on the R/S index was associated with a ~25 %SD decline in SRH. In contrast, when Gnostic Theists reported moving up one SD on the R/S index, they reported a ~13 %SD increase in SRH (based on unpresented β-weights). These findings are supportive of the contention that belief/knowledge categories influence the experience of the R/S index on health outcomes. However, with the inclusion of covariates, neither moderating term remained significant.

It is unclear as to why the moderating terms did not remain significant with the inclusion of covariates. These findings are somewhat inconsistent with what Speed and Fowler (2016) found, using pooled GSS data from 2008, 2010, and 2012. Those researchers noted that subjective religiosity was moderated by an atheist identity even with the inclusion of covariates. However, those authors used individual R/S constructs as opposed to an R/S index, and had a narrower categorization of what an "atheist" was construed to be. These differences may help to explain the failed moderation terms for atheists. Furthermore, the R/S index in the current study was a non-significant predictor of SRH, meaning that differences in how belief/knowledge categories experienced these variables may have been less obvious. This muted role between the R/S index and SRH may also help to explain why Gnostic Theist identity did not remain a consistent predictor of SRH.

Unhealthy Agnostics?

Results indicated that Agnostic Theists, who reported higher scores on the R/S index, were less likely to be in the highest happiness category (i.e., "Very happy") than the lowest happiness category (i.e., "Not too happy"). These results are intriguing, as they would suggest believers in god who were uncertain about his/her/its existence did not experience the R/S index positively. It is important to note that uncertainty about god(s)' existence was not inherently associated with lower happiness, but it was uncertainty combined with higher levels of the R/S index, that was associated with poorer outcomes. The observed moderation effects, again, support the notion that theological and epistemological positions influence the experience of R/S. What a person believes, and the confidence he/she has in

that position, appears to only minimally predict a person's well-being in itself. However, when combined with information about the R/S index, these belief/knowledge categories became a significant predictor of happiness.

Unfortunately, the directionality of this relationship is unclear, and there are several explanations as to why Agnostic Theists reported reduced membership in the "Very happy" category. It may be the case that persons, who are religiously/spiritually active, may extract fewer benefits without a concomitant confidence in the existence of god(s). This explanation is consistent with the coherency hypothesis; the benefits of the R/S index are not inherent, but are dependent on the valuation of those beliefs and behaviors. Alternatively, a person who is active in religious or spiritual activities may have their confidence in god(s)' existence shaken when experiencing hardship. In this case, a person may have difficulties reconciling the existence of god(s) with the troubles he/she is experiencing. This explanation is also consistent with the coherency hypothesis as well. A religiously active person may have difficulties perceiving an internal coherency to a life that is difficult, and thus would have a reduced likelihood of being in the highest happiness level (as opposed to the lowest happiness level). Either of these explanations is plausible, but further investigation of this topic is needed.

Novel Findings?

As noted in the introduction, attending church, praying, and subjective religiosity are all associated with a variety of salutary outcomes. While these remain a consistent staple of the R/S–health literature, they have been shown to lack a degree of nuance. The current study illustrated that what persons believed in regard to god(s), and how confident they were in their position on god(s)' existence, moderated the relationship between the R/S index and health outcomes. The author of this study acknowledges that there is a degree of obviousness with its manipulation (it makes sense that theology and epistemology would influence the experience of R/S); however, it is informative to explore possibilities as to why this relationship had not been extensively tested in the past.

Part of the reason for this oversight may relate to the religious demographics of the USA. As seen in Table 2, the vast majority of persons indicated a belief in a personal god(s), and over 90 % of respondents indicated a belief in some form of god(s). While Negative Atheists represented a non-trivial minority ($\sim$9 % in the current study), it is easy to see that research describing theists is applicable to a wider range of people. This is not to suggest that research on atheists is less valuable; in fact, it is widely recognized that more research is needed (Baker and Robbins 2012; Galen and Kloet 2011), only that theists make up the majority of Americans. Consequently, dividing Americans into "believers" and "non-believers" may not seem initially worthwhile because of the disparate group sizes.

Another contributing factor is likely the confusion over the term "atheism." Hwang et al. (2011) noted that persons may identify as atheist without knowing what it necessarily entails, and Hackett (2014) noted that some self-identified atheists will also indicate that they believe in god(s) (which is generally inconsistent with most definitions of atheism). Moreover, questions regarding religious affiliation may include "atheist" and "agnostic" as options for a religious identity. This approach to data collection is problematic as it would suggest that persons can either not believe in god(s) or be religious. However, these positions are not mutually exclusive and ¼ of Negative Atheists in the current study identified as being a part of a religious tradition (see Table 2). Rather than relying on persons to identify as an atheist in the current study, atheist status was inferred from what

the respondent indicated about god(s). The author of the current study would argue that this is a superior approach to assessing atheism because it avoids numerous definitional conflicts about what an atheist is or is not.

This definitional confusion is also an issue in regard to what "agnosticism" entails. Approximately 82 % of the Agnostic Theist group identified as being a part of a religious tradition. In other words, even though these persons were not sure of god(s)' existence, they still identified as religiously affiliated. This is because persons do not have to be certain that there is a god(s) in order to claim kinship with a religious tradition. These descriptive statistics are telling because they reveal the inadequacy in how atheism/agnosticism are conceptualized and investigated within the R/S–health literature. What a person believes is not necessarily synonymous with how he/she will categorize him/herself—nor will the certainty in which one holds beliefs influence how one will categorize him/herself. Religious identity is a complex topic that is entangled in competing cultural and social values.

Overall, the results from the current study built on theoretical foundations discussed by Galen and Kloet (2011). In their study, those authors noted that epistemological viewpoints played a role in predicting health outcomes, while theistic viewpoints did not appear to play a major role. However, the current study expanded that rationale by examining the moderating influence of differing belief/knowledge categories influencing the relationship between an R/S index and health outcomes. Whereas Galen and Kloet (2011) reported that agnostic groups reported diminished health, this specific finding was only replicated when examining the moderated R/S index. Similarly, Speed and Fowler (2016) found that atheists experienced religiosity more negatively than non-atheists did in regard to self-rated health. The current study had a similar, although not exact, pattern of findings. However, the differences between the current study and previous studies are likely the product of methodology rather than any serious disagreement. In short, the current study tended to agree that belief in god(s) was not inherently healthier, and that gnosticism (but only for practicing theists) was generally healthier than agnosticism. Moreover, the current study supported the notion that belief/knowledge categories moderate the relationship between R/S and health outcomes.

Limitations

Given the current study relied exclusively on archival data, the largest limitations were on which questions were addressed by the GSS in 2012 and 2014. Ideally, a wider variety of health outcomes would be desirable in future research. Moreover, a wider variety of items in which to assess theological and epistemological positions would have also been very beneficial in determining categories. The Negative Atheist category did not provide information on the certainty that respondents felt on that topic. Similarly, the Deist category only indicated a belief in a god, without a corresponding indication of confidence. Finally, the GSS lacked items addressing social support, which is a covariate that promotes health (Fowler et al. 2013) and is often linked to attending church (e.g., Horning et al. 2011). This lack of covariate control limited the ability of the current study to discuss the extent of the relationship between the R/S index and health outcomes.

With these limitations aside, it is important to note that a nationally representative sample of the resident population of the USA was achieved. This level of representativeness is often absent within the literature that addresses atheism-health, which means the trade-off between using archival data and having a representative sample was arguably worthwhile. In closing, while R/S certainly has a positive relationship with well-being for

many Americans, assuming that this relationship would hold irrespective of theological or epistemological perspectives is certainly unbelievable.

Compliance with Ethical Standards

Conflict of interest This author has no conflict of interests to report. All data analysis was done using a pre-existing data source. These data were collected in a manner consistent with the ethical requirements of the American Psychological Association.

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