

Original article

A systematic review of associations among religiosity/spirituality and adolescent health attitudes and behaviors

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Abstract

Purpose: To systematically review and synthesize literature concerning the relationships among religiosity, spirituality, health attitudes, and health behaviors in adolescents.

Methods: Forty-three studies between 1998 and 2003 were systematically reviewed to (a) determine if the studies were based on conceptual or theoretical frameworks, (b) identify the types of religiosity and spirituality measures used as well as their effects on health attitudes and behaviors, (c) evaluate the quality of these measures, (d) determine categories and frequency of measures of health attitudes and behaviors, (e) evaluate the quality of the research designs, and (f) determine the effects of religiosity or spirituality on adolescent health attitudes and behaviors.

Results: Over half ($n = 26$) the studies were atheoretical or had an unclear framework and the other half were based on a wide variety of conceptual and theoretical models. A total of 37 distinct religiosity/spirituality variables were identified and varied in specificity. Less than half ($n = 21$) reported reliability of the measures and only seven contained information about validity of the measures. All 43 studies included measures of health-risk behaviors and/or attitudes but only seven addressed health-promoting behaviors. Most studies (84%) showed that measures of religiosity/spirituality had positive effects on health attitudes and behaviors.

Conclusions: The variety of studies and measures indicate that religiosity and spirituality may be important correlates of adolescent health attitudes and behaviors. Although the majority of the studies reviewed were well designed, there was no consistency in the theoretical bases and operational definitions of religiosity/spirituality phenomena. © 2006 Society for Adolescent Medicine. All rights reserved.

Keywords:

Religiosity; Spirituality; Adolescent health behaviors; Adolescent health attitudes

Adolescent health is strongly related to behaviors learned within a socio-cultural context. It is well documented that behaviors linked to social learning and cultural norms can either increase or decrease an adolescent's risk for adverse health outcomes that may persist through adulthood. For example, Maney and colleagues [1] found that alcohol use among a nationally representative sample of adolescents was highly associated with troubled relationships with parents and friends as well as having done things they later

regretted. Moreover, there is mounting evidence that religiosity and spirituality are associated with health and well-being [2,3]. Recently, researchers have sought to understand the influence of protective resources such as religious and/or spiritual beliefs and practices on health behaviors in adolescents. In a longitudinal study of 7th–10th graders, Wills et al [4] found that religiosity buffered the effects of life stress on substance use and provided protection against use of alcohol, tobacco, and marijuana. Similarly, in a study of students in grades 7–12, Lammers and colleagues [5] found that greater religiosity was associated with lower levels of sexual behavior.

In the initial analysis of data from the National Longi-

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tudinal Study on Adolescent Health (Add Health), researchers reported an association between high levels of prayer and importance of religion and low frequencies of cigarette, marijuana, and alcohol use as well as later sexual debut [6]. More recently, further analysis of data from Add Health showed that religiosity, defined as importance of religion, attendance at religious services, and frequency of prayer, was associated with fewer health-risk behaviors in adolescents with disabilities [7]. Researchers have also found that African-American and Hispanic youth are more religious than white youth, female youth tend to be more religious than male youth [8,9], and that there is limited evidence that younger adolescents are more religious than those who are older [9].

The link between religiosity/spirituality (R/S) and health behaviors in adolescents is currently poorly understood for a number of reasons. Terms such as religiosity, religiousness, religious involvement, and spirituality are often used interchangeably. Scholars who study these phenomena have not reached consensus on theoretical and operational definitions of these terms [10,11]. Measures of these concepts have been quite varied and often consisted of single-item measures with questionable validity [12,13]. These limitations preclude the development of testable theory from which to develop health-promoting interventions. Moreover, the majority of studies have been cross-sectional rather than longitudinal, thus preventing evidence of cause-effect relationships. Other limitations of current knowledge are the reliance on anecdotal case histories [14] and the application of adult models to the study of adolescents [15].

In recent years, several scholars have written reviews about the association between R/S and adolescent outcomes [16–18] as well as, more specifically, on adolescent health behaviors [13,19]. These reviews provide a promising baseline for assessing the state of research on this topic. However, the study of religiosity and spirituality is a potentially controversial topic and, thus, these reviews are subject to criticisms of subjectivity. Johnson et al [20] suggested that there are several limitations inherent in traditional reviews of research literature. First, the reviewer must exercise his or her judgment to make subjective decisions on which studies to include in the review process, thus introducing the possibility of personal bias. Second, even if biases are suspected, the review process is relatively unstructured, and it is, therefore, difficult to replicate the review process to assess potential biases. Third, the interpretation of the studies reviewed is vulnerable to criticisms by others who may have a different perspective.

At present, researchers suggest that there is an association between religiosity/spirituality and adolescent health behaviors. However, to date, there has been no known systematic review of the research evidence in this field. Therefore, the purpose of this study was to review and analyze systematically the state of recent research concern-

ing the relationship between R/S and adolescent health attitudes/behaviors.

Systematic review of research

To counter potential criticisms of bias and subjectivity in the review of the research on the link between R/S and adolescent health outcomes, we adopted a review strategy called a systematic review (SR) [20]. An SR takes an epidemiological examination of the methodology and results section of a specific population of studies to reach a research-based consensus on a particular topic. The key benefit of an SR is that important aspects of the review are quantified, including clear criteria for the inclusion and exclusion of studies in the sample as well as the approach for analyzing the methods for each study. Hence the results of the review, like any good research, are replicable [20]. An example of an SR is a review conducted by Johnson and his colleagues [20] in which the literature on the relationships between religiosity and delinquency was systematically assessed.

Methods

In an SR, the population of interest is a specified group of research studies rather than a population of individuals. Our population consists of studies spanning a 6-year period from January 1998 to December 2003 in which the relationship among adolescent R/S and health attitudes and behaviors was the primary focus.

Sample selection

We searched articles in the following online databases: CINAHL, ERIC, Dissertation Abstracts International, Medline, PsycINFO, and Sociological Abstracts with the following key terms: *adolescent/adolescence* and *religiosity, religion, religious, spiritual, and spirituality*. We read the titles of all papers generated by our search results. If the title of the paper contained words or phrases related to religiosity and spirituality (e.g., *faith, religious, prayer, Christian, Orthodox Jew*, etc.) and words or phrases related to adolescence (e.g., *adolescent, children, student, college student, youth, young adults*), the paper was retrieved and read to ascertain if it met the criteria for our SR. To be selected, a paper must have met the following criteria:

1. Involved empirical research on a group of adolescents with at least one quantified variable of any kind. Qualitative studies and individual case studies were excluded.
2. Analyzed the relationship between at least one quantified R/S variable and at least one quantified adolescent health attitude or behavior. For the purposes of this review, a distinction was made between health and health attitude/behavior. Health attitudes and behaviors refer to those dispositions and activ-

ities that promote health (e.g., healthy diet), prevent injury (e.g., wearing of seat belts), or threaten the health of adolescents (e.g., drugs abuse). Studies that examine other health variables (e.g., frequency of illnesses) were not included.

3. Examined adolescents' R/S. Hence, studies that focused exclusively on the associations among parental, familial, and/or peer R/S and health attitudes and behaviors were excluded.
4. Excluded studies that did not *specifically* examine the relationships between R/S and health attitudes/behaviors, even if items on health attitudes and behaviors were incorporated as part of a measure of some other construct (e.g., an omnibus measure of delinquency that included an item on drug use).
5. Limited to studies where the mean age of the sample was at least 10 years old and not more than 20 years old. Studies that did not specify the mean ages of their samples were excluded if it could not be reasonably inferred that the mean ages of the samples were between 10 and 20 years.
6. Limited to papers published in peer-reviewed journals or listed in the Dissertation Abstracts International. Non-peer reviewed journals and other unpublished papers were excluded to ensure that the studies in the SR were more likely to be rigorous in their research designs and analyses. However, this exclusion of unpublished papers might result in publication bias (e.g., studies that contain statistically significant results were more likely to be published). As a compromise, dissertations and theses listed in the Dissertation Abstracts International were included. Dissertations and theses are typically subject to the scrutiny of thesis or dissertation committees in a way that is not unlike that of the review process for articles published in peer-reviewed journals.
7. Limited to samples from the United States. Studies using international samples were excluded because our key word search revealed too few international studies to provide meaningful cross-cultural/country comparisons.

Analysis

From an initial list of 1375 manuscripts containing the key words in the search criteria, a list of 43 studies that met all the above search criteria was compiled. Several analyses were made to assess the state of research in these studies. First, each study was examined to determine if there was a theoretical or conceptual framework. This was done out of concern for building a science of adolescent health. Because phenomena of adolescent health and health behaviors do not belong to a single disciplinary domain, much of what we know about these phenomena might be atheoretical and

descriptive and hence, this hinders the progress of science [21].

Second, the types and frequency of R/S measures used and their relationships with adolescent health attitudes and behaviors were assessed. Such an analysis helped to ascertain the most and least frequently used R/S measures as well as the types of R/S measures that consistently exerted positive effects on adolescent health attitudes and behaviors. An R/S measure was defined as having a positive effect in a particular study if it was found to be:

1. Inversely associated with at least one health-risk attitude/behavior measure and not positively associated with any health-risk attitude/behavior measure or inversely associated with any health-promoting attitude/behavior measure; or
2. Positively associated with at least one health-promoting attitude/behavior measure and not inversely associated with any health-promoting attitude/behavior measure or positively associated with any health-risk attitude/behavior measure.

Consistent with the inclusion criteria for the SR, familial, parental and peer measures of R/S were not included in the analysis. In studies that examined associations between subscales of R/S measures and measures of health attitude/behavior, each subscale was treated as a separate measure of R/S.

Third, the quality of R/S measures used was examined. Koenig et al [22] recommended that all studies of religion and health should include some evidence that the measures used were reliable and valid. In the present review, the frequency and proportion of studies that reported the validity and reliability of R/S measures used were examined. In view of criticisms by scholars [12,13] that studies on R/S and adolescent health behaviors rely too heavily on one-item measures of R/S, the number and proportion of such studies were also analyzed.

Fourth, the frequency and categories of health attitude and behavior measures used were analyzed. We were interested in determining which health attitude and behavior measures were most frequently used and which measures might have been underused. In classifying the health attitude and behavior measures, a distinction was made between health-risk and health-promoting attitudes and behaviors. The former refers to attitudes and behaviors that threaten one's health (e.g., substance abuse), whereas the latter refers to proactive attitudes and behaviors that promote health or prevent injury (e.g., wearing of seat belt and physical exercise).

Fifth, the quality of research designs was examined. Past reviews of religiosity and health research [22–24] as well as of religiosity and adolescent outcomes research [17] have criticized previous studies for methodological weaknesses such as over reliance on cross-sectional data, a lack of control for confounding variables, and failing to investigate

possible mechanisms by which R/S influences health attitudes and behaviors. In light of these concerns, the sophistication of research designs was analyzed using the following criteria: (a) control of covariates, (b) utilization of longitudinal data, and (c) investigation of mediators linking R/S to health attitudes/behaviors.

Sixth, the studies were categorized according to the nature of their reported relationships between R/S and health attitudes/behaviors. The studies were classified into four categories: positive, none, mixed, and negative effects. A study was defined as having positive effects if:

1. At least one R/S measure was inversely associated with at least one health-risk attitude/behavior measure, and none of the R/S measures was positively associated with any health-risk attitude/behavior measure or inversely associated with any health-promoting attitude/behavior measure; or
2. At least one R/S measure was positively associated with at least one health-promoting attitude/behavior measure, and none of the R/S measures was inversely associated with any health-promoting attitude/behavior measure or positively associated with any health-risk attitude/behavior measure.

A study was considered to have no effects if none of the R/S measures had significant relationships with any of the health attitude/behaviors measures in the study. A study was considered to have negative effects if:

1. At least one R/S measure was positively associated with at least one health-risk attitude/behavior measure, and none of the R/S measures was inversely associated with any health-risk attitude/behavior measure or positively associated with any health-promoting attitude/behavior measure; or
2. At least one R/S measure was inversely associated with at least one health-promoting attitude/behavior measure, and none of the R/S measures was positively associated with any health-promoting attitude/behavior measure or inversely associated with any health-risk attitude/behavior measure.

A study was defined as having mixed effects if:

1. At least one R/S measure was inversely related to a health-risk attitude/behavior measure, and at least one R/S measure was positively related to a health-risk attitude/behavior measure or inversely related to a health-promoting attitude/behavior measure; or
2. At least one R/S measure was positively related to a health-promoting attitude/behavior measure, and at least one R/S measure was inversely related to a health-promoting attitude/behavior measure or positively related to a health-risk attitude/behavior measure.

An example of a study with mixed effects is one in which

prayer is inversely associated with alcohol intake but positively related to drug abuse. Relationships that were merely indicative of statistical trends but were not statistically significant were not included in the above analyses.

Results

A total of 43 studies satisfied the above criteria for inclusion in the review (see Appendix for a list of the studies). Of the 43 studies, 12 were dissertations/theses (27.91%) and 31 (72.09%) were articles published in peer-reviewed journals.

In one study (#14, Appendix), the mean age of the sample was not reported, but the sample age range was from 15 to 34 years. This study was included in the SR because it categorized the sample into age-specific groups (e.g., 15–19 years and 20–24 years) and analyzed the data accordingly. For the purposes of the SR analysis, the data relating to the 15–19-year-olds only were examined.

Demographics of participants

Twelve studies (27.91%) were conducted with nationwide samples of adolescents, 10 of which (23.26%) were nationally representative samples. Five studies analyzed data from the National Longitudinal Study on Adolescent Health (Add Health), which involved a nationally representative sample of adolescents enrolled in schools. None of the studies used a sample of out-of-school adolescents. Samples in six studies (13.95%) were gender-specific (all six were female samples) and samples in another six studies (13.95%) were race-specific (all six were African-American samples).

A small proportion of the studies examined differences in R/S among different racial, gender, and age/cohort groups. Six studies (13.95%) analyzed differences in R/S among racial groups. All six found that African-American adolescents and/or African-American and Hispanic adolescents scored significantly higher than white adolescents on at least one R/S measure. In one of these studies (#9, Appendix), African-American adolescents also reported lower levels on one other R/S variable (attendance at religious services/classes) compared with white adolescents. No study investigated differences in R/S between Asian Americans or Native Americans and other racial groups.

Ten studies investigated differences in R/S between genders, eight of which found significant differences. All eight studies reported that female adolescents scored significantly higher than their male counterparts on at least one R/S measure.

Five studies analyzed differences in R/S among age/cohort groups and three of these reported significant differences. In all three studies, younger adolescents scored significantly higher than older adolescents on at least one R/S measure. In one study (# 34, Appendix), younger adoles-

Table 1
Theoretical frameworks and conceptual models

Theoretical framework/conceptual model	Frequency of occurrence
None specified or unclear	26
Developmental assets framework	2
Social control theory	1
Social network theory	1
Social control and learning theory	1
Socialization influence model	1
Allport's intrinsic and extrinsic religious orientation	1
Roy's adaptation (nursing) model	1
Sexual socialization and social control theories	1
Peer influence and self-rejection theories	1
Power control and Giddens' modernity theories	1
Message interpretation process model	1
Public health model of risk-focused prevention	1
Behavior-genetic paradigm	1
Conceptual model with no title	1
Holistic and resilience models	1
This-worldly supernatural sanctions thesis	1

cents also reported lower levels on one other R/S measure compared with older adolescents.

Theoretical frameworks/conceptual models

Table 1 is a summary of the theoretical frameworks or conceptual models that guided the studies. More than half ($n = 26$) were atheoretical or did not make the conceptual frameworks clear, whereas the remaining studies ($n = 17$) used a wide variety of conceptual and theoretical models. Social control theory framed one study and was used in conjunction with learning theory and sexual socialization, respectively, in two other studies. Six studies (including one dissertation) referred loosely to concepts of resilience but did not clearly identify these as the framework for the study.

Frequency, categories and effects of R/S measures

Table 2 shows the categories of R/S measures described in the studies. The following categories of R/S measures were found most frequently: attendance/participation in religious activities/services (23 studies), composite/generic measures of religiosity (15 studies), religious importance (10 studies), and religious denomination/affiliation (9 studies). Table 2 also displays the number and percentage of studies in which specific types of R/S measures had positive effects on health attitudes and behaviors. Among the four most commonly used R/S measures discussed above, measures of religious denomination/affiliation had the lowest proportion of positive effects (6 out of 9, 66.67%), whereas composite/generic measures of religiosity had the highest proportion of positive effects (14 out of 15, 93.33%).

Quality of R/S measures

Only 21 studies (48.84%) provided some evidence of reliability and only seven studies (16.28%) reported validity of at least one R/S measure. Among the studies that did not provide evidence for the reliability of R/S measures, 13 (30.23% of the total number of studies) relied exclusively on the use of one-item measures of R/S.

Frequency and categories of health attitude/behavior measures

Two studies examined health attitudes only (i.e., suicide ideation and intent to use substances). Nine studies addressed both attitudes and behaviors, and the remaining 32 studies focused on health behaviors only. Table 3 shows the categories of health attitude/behavior measures examined. The most commonly used health behavior measures were of alcohol use (18 studies, 41.86%), sexual activity/virginity status (16 studies, 37.21%), and use of generic drugs or drugs other than marijuana (13 studies, 30.23%). Every study in the sample examined the associations between R/S and health-risk attitudes/behaviors. Only seven studies (16.28%) explored the relationships between R/S and health-promoting attitudes/behaviors.

Quality of research design

Table 4 is a summary of the quality of research designs in the studies. The vast majority of studies (39 studies, 90.70%) controlled for covariates (e.g., demographic variables that are known to be associated with health attitude/behavior variables). Five studies (11.63%) explored mediating variables between R/S and health attitudes/behaviors, four of which (9.30%) used structural equation modeling techniques. Ten studies (23.26%) used longitudinal data in the analysis of the links between R/S and health attitudes/behaviors.

Effects of RS on health attitudes and behaviors

Table 5 delineates the nature of the relationships among R/S and health attitude and behavior variables. In 36 studies (83.72%), R/S had positive effects on health attitudes and behaviors. R/S had no effects in one study (2.33%) and mixed effects in six studies (13.95%). There were no studies where R/S had negative effects.

In a few studies, bivariate analyses resulted in positive effects of R/S, but such effects ceased to be statistically significant when subsequent statistical analyses were conducted using the control of covariates variables (e.g., multiple regression). After taking into account these studies, positive effects of R/S on health attitudes/behaviors remained in 33 studies (76.74%). Among the remaining 10 studies that did not have positive effects (four had no effects and six had mixed effects), six of these were found in published articles, whereas four were found in dissertations/theses.

Table 2
Types of adolescent RS measures

RS measures	Total		No. with positive effects	
	Frequency	Percentage of total	Frequency	Percentage of category
Attendance/participation in religious activities/services	23	53.49	19	82.61
Composite/generic measure of religiosity	15	34.88	14	93.33
Religious importance	10	23.26	9	90.00
Religious denomination/affiliation	9	20.93	6	66.67
Conservative/traditional religious beliefs/doctrinal orthodoxy	5	11.63	3	60.00
Extrinsic religiosity	4	9.30	0	0
Intrinsic religiosity	4	9.30	1	25.00
Composite/generic measure of spirituality	3	6.98	2	66.67
Theism/belief about God	3	6.98	1	33.33
Drug use as sinful beliefs	2	4.65	2	100
Personal devotion/private religiosity	2	4.65	2	100
Agreement with family spirituality	1	2.33	1	100
Alcohol-related God/higher power control beliefs	1	2.33	1	100
Anticipated punishment in the afterlife	1	2.33	0	0
Attitudes toward Adventist standards	1	2.33	0	0
Belief in higher power and involvement in spiritual practices	1	2.33	0	0
Commitment to church doctrine and practice	1	2.33	1	100
Divine support	1	2.33	0	0
Endorsement of Adventist beliefs	1	2.33	1	100
Enforcement/violation of Adventist lifestyle	1	2.33	0	0
Family religious socialization (extent to which adolescent talks to parents about faith)	1	2.33	1	100
Frequency of reading holy book	1	2.33	1	100
Human spirituality: value life/growth	1	2.33	1	100
Prayer	1	2.33	0	0
Public religiosity	1	2.33	1	100
Regular religious instruction	1	2.33	1	100
Religious activities focused on caring for others	1	2.33	0	0
Religious values	1	2.33	1	100
Religious/spiritual practices	1	2.33	1	100
Spiritual connectedness with others	1	2.33	1	100
Spiritual experiences	1	2.33	1	100
Spiritual transcendence	1	2.33	1	100
Spirituality quest	1	2.33	0	0
This-worldly supernatural sanction	1	2.33	1	100
Uniqueness of spirituality	1	2.33	0	0
Human spirituality: honesty/helping others	1	2.33	1	100

Discussion

In general, the results of this SR are consistent with those of past reviews on adolescent religiosity and health outcomes. Significantly, R/S appeared to have positive effects on adolescent health attitudes or behaviors in more than eight of ten studies in the review. After excluding studies in which positive effects ceased to be statistically significant as a result of the control of covariates, R/S continued to have positive effects in more than three-quarters of the studies in the SR.

Slightly more than one-fourth of the studies included nationwide samples. None of the studies focused on out-of-school adolescents. Six studies found that African-American and/or Hispanic adolescents had higher levels of R/S than white adolescents. These findings support earlier reviews by other scholars [8,9,17]. Those that

included gender comparisons also support previous findings that females scored higher on R/S measures than males [8]. Similarly, studies that compared age cohorts found that younger adolescents scored higher on measures of R/S than older adolescents [9,17].

Findings from this systematic review provide evidence for the assertion that the study of R/S is neither conceptually clear nor firmly grounded in theory [10,11]. Six studies used terms such as “risk” and “protective factors” that suggested a resilience framework had been used, but this was not specified as a framework for the study. The number of different frameworks used is further evidence that R/S is not currently being studied in an organized way.

Similarly, the large number of types of R/S measures used in these studies provides additional evidence of the

Table 3
Categories of health attitude/behavior measures

Health attitudes/behaviors	Frequency	Percentage
Generic health attitudes/behaviors	2	4.65
Health-risk attitudes/behaviors	43	100
Alcohol use	18	41.86
Sexual activity/virginity status	16	37.21
Drug use (generic/other than marijuana)	13	30.23
Marijuana use	9	20.93
Tobacco use	8	18.60
Violence/aggression/weapon-carrying	6	13.95
Suicide/attempted suicide/suicide ideation	4	9.30
Peer alcohol/marijuana/drug/tobacco use	3	6.98
Health-promoting attitudes/behaviors	7	16.28
Birth control	5	11.63
Virginity pledge	1	2.33
Generic health-promoting measure	1	2.33
Personal safety	1	2.33
Seat belt use	1	2.33
Diet	1	2.33
Exercise	1	2.33
Sleep	1	2.33

lack of an organized body of knowledge with respect to associations between R/S and adolescent health attitudes/behaviors. Attendance or participation in religious activities/services was used as a measure in approximately half the studies. The use of a composite measure of religiosity in 15 studies and a composite measure of spirituality in three studies is somewhat promising, suggesting that R/S may be a complex and multidimensional construct, which researchers are beginning to operationalize. Other measures are vague (e.g., public religiosity) whereas still others are denomination-specific (e.g., endorsement of Adventist standards). Findings from such studies provide little information that is useful to professionals planning comprehensive interventions to promote adolescent health.

With respect to the effects that specific R/S measures had on health attitudes/behaviors, religious denomination/affiliation had the lowest proportion of positive effects among the four most commonly used R/S measures. This might indicate that adolescents' religious denominations or affiliations are relatively poor indicators of R/S. Such measures might more accurately reflect their parents' choice of religious affiliation rather than their personal religious/spiritual commitment. All the studies in this review measured health-risk behaviors and this is a useful finding because it reflects our current understanding about the social influences of such behaviors on adolescent health. Very few studies included measures of health-promoting attitudes and behaviors, an area requiring further study.

Overall, the majority of the research designs used in these studies were fairly rigorous. Over 90% controlled for covariates; nearly one of every four used longitudinal data, thus making cause–effect statements more plausi-

ble. However, only five studies conducted mediation analyses. Such analyses are important because they help researchers explain the mechanisms linking R/S to adolescent health attitude/behaviors.

Unfortunately, less than half the studies reported reliability of the R/S measures and only 16% addressed the issue of validity. Moreover, nearly one-third of the studies used single-item measures, thus precluding evidence for reliability and validity of these measures. These findings support the critiques of other scholars who have commented on the poor quality of R/S measures used in this field of research [12,13].

We acknowledge that there were limitations to this systematic review. Studies that did not include one of the key terms (e.g., words and phrases related to R/S and adolescence) in their titles were not included in this analysis. For example, the Add Health study of religiosity and health-risk behaviors in adolescents with disabilities did not contain all our search terms in the title [7]. Other similar studies may have also been excluded for this reason [5]. In addition, qualitative studies were not included, which could have provided rich evidence of personal experiences of the relationship between R/S and health attitudes/behaviors in the words of adolescents themselves. Despite these limitations, this SR was rigorous in that we examined 1375 manuscript titles, only 43 of which met our search criteria involving the empirical study of the relationships among R/S and adolescent health attitudes and behaviors. All 43 studies were published in peer-reviewed journals or were dissertations/theses, indicating a review process that suggests a level of rigor.

In summary, the majority of the studies in this review provide support for the view that religiosity or spirituality exerts a positive influence on adolescent health attitudes and behaviors. Nevertheless, research in this field has often been plagued by methodological problems, as indicated by the high proportion of studies that did not provide evidence for the reliability and validity of the R/S measures used. More complex studies, particularly those with mediation analyses and longitudinal designs, as well as the use of representative samples (including out-of school adolescents), are needed. Furthermore, theoretical and conceptual clarity is needed to frame studies that can form the basis for future interventions. Such clarity is also needed to validate the measures of these phenomena. Religiosity and spirituality may be protec-

Table 4
Quality of research design

	Frequency	Percentage
Controlled for covariates	39	90.70
Mediating variables	5	11.63
Longitudinal data	10	23.26

Table 5
Effects of RS on adolescent health attitudes/behaviors

Effects	Without covariates controlled		Covariates controlled	
	Frequency	Percentage	Frequency	Percentage
Positive	36	83.72	33	76.74
None	1	2.33	4	9.30
Mixed	6	13.95	6	13.95
Negative	0	0	0	0

tive resources that develop over time and contribute to both short- and long-term health outcomes. More work needs to be done to test this hypothesis.

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Appendix A

Studies included in the systematic review of associations among religiosity/spirituality and adolescent health attitudes and behaviors

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