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Measurement of Religiosity/Spirituality in Adolescent Health Outcomes Research: Trends and Recommendations

Sian Cotton,
Department of Family and Community Medicine, University of Cincinnati Academic Health Center, P.O. Box 670840, Cincinnati, OH 45267-0840, USA

Meghan E. McGrady, and
Department of Psychology, University of Cincinnati, Cincinnati, OH, USA

Susan L. Rosenthal
Department of Pediatrics, Columbia University College of Physicians and Surgeons, New York, NY, USA

Sian Cotton: sian.cotton@uc.edu

Abstract

The relationship between religious/spiritual (R/S) factors and adolescent health outcomes has been studied for decades; however, the R/S measurement tools used may not be developmentally relevant for adolescents. A systematic literature review was conducted to review and evaluate trends in measuring R/S in adolescent health outcomes research. In this review a total of 100 articles met criteria for inclusion. Relatively few ($n = 15$) included adolescent-specific R/S measures or items accounting for developmentally relevant issues such as parental religiosity or age-appropriate language. Future R/S and health research with adolescents would be strengthened by incorporating developmentally relevant R/S measurement tools, psychometrics, and multidimensional measures.

Keywords

Religiosity; Spirituality; Measurement; Adolescents; Health outcomes

Introduction

Decades of research have consistently highlighted the generally positive relationships between religious and spiritual (R/S) variables and health in adolescents; however, measurement of these complex constructs among adolescents remains problematic. While it is widely recognized that R/S are multidimensional constructs that incorporate elements of R/S behaviors, attitudes, values, meaning, and/or transcendence, large national adolescent health databases, where much religion–health research has been published, incorporate only one or two R/S items often limited to religious service attendance or religious affiliation. Studies that assess religiosity with a single-item such as religious service attendance are difficult to interpret as the "key ingredient" of the potential religious influence on health is nebulous. Furthermore, researchers use a wide variety of tools to assess R/S, and often make up their own R/S measures with little theoretical background or psychometric testing. In addition, very few studies address the enormous developmental changes (cognitively,

Correspondence to: Sian Cotton, sian.cotton@uc.edu.

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socially, and emotionally) that adolescents are rapidly undergoing by using adult-based measures that may not be appropriate for use in adolescents. Only with improved measurement, can a better understanding of mediating mechanisms (the why of the relationship) be determined, thus making interventions and programs that include R/S factors aimed at improving adolescent health more targeted and precise.

It is likely that the unique developmental changes in cognitive, social, and emotional realms influence the expression of R/S in adolescents, though R/S measures rarely incorporate these developmental considerations. Though there may be other relevant developmental influences (e.g., cultural), we have chosen in this paper to use the examples of social development, cognitive development, and emotional development to illustrate our points. For example, regarding *social development*, the complementary role of parents and peers is likely to be very important in R/S. General developmental literature demonstrates that both are influential with peers playing a more important role in aspects of day to day living, and parents on issues of values. Thus, one would want to consider the role of the peer religious youth group, as it may be an important avenue through which adolescents garner social support and navigate peer influences related to health (e.g., engagement in risky health behaviors). In addition, the social influences of parental religious practices and religiosity (e.g., how much a parent "lives" his/her religion) on an adolescent's own religiosity and religious values in turn, may be related to choices in health behaviors.

Cognitively, adolescents are undergoing significant changes, with the initiation of abstract thinking most often occurring in early adolescence. While adolescents have the potential to develop formal operational thinking (abstract and hypothetical reasoning), not all adolescents reach this stage or exhibit it in all situations (Steinberg 2008). Abstract thinking is based on "propositional logic," in which an adolescent is able to say, for example, "if A is true or B is true, then C is true." Adolescents who have acquired these cognitive skills are able to think about and act on their lives at home and in school using higher order thinking that propels their understanding of the world and their surroundings. Cognitive developments such as these may be related to how religion influences adolescent health, as an adolescent may be able to reflect on choices and how his/her religious values may impart a belief system related to health (e.g., engagement in health risk behaviors (Steinberg 2008). In addition, R/S measures may require that an adolescent be able to use deductive reasoning or abstract thinking to answer questions related to how God influences his/her life or how prayer might influence his/her coping. Furthermore, some questions on R/S measures may (or may not) be understandable to an adolescent at an earlier cognitive development phase or lower reading ability level (Maltby 2002).

Regarding *emotional development,* children and adolescents develop increased capacities around emotional recognition, emotional expression and cognitive understanding of emotions (sometimes referred to as "emotional competency") over time (Adams and Berzonsky 2005). An adolescent may be at varying levels of emotional development depending on a host of individual (e.g., personality), family (e.g., cohesiveness), and/or social (e.g., socioeconomic) factors. In addition, emotional autonomy develops in which the adolescent may not turn to their parents immediately when they are upset or worried, may begin to see their parents as "real people," and may not see their parents anymore as "all-knowing"(Steinberg 2008). As definitions of spirituality and emotional states often interplay, some R/S measures may by nature require that a certain level of emotional development be attained in order to understand and answer the questions about one's own emotional state. Furthermore, religious adolescents may turn to God or a Higher Power relatively more (or in some cases less) as the "all-powerful" role of parents shifts, and teens begin to look outside of the parent–teen dyad for emotional support. Furthermore, an adolescent must have developed some capacity to reflect on one's emotional experience as

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one's own (may also require cognitive level of abstraction and perspective-taking) and to interpret that emotion in relation to one's lived experience. While most healthy adolescents have developed skills in these areas, not all have achieved equal levels of emotional development, and many are going through rapidly changing emotional states.

In summary, this paper will take a developmental influences perspective, considering how social, cognitive, and emotional developmental levels may intersect and affect the measurement of R/S variables in adolescents. R/S measurement and constructs are likely influenced by other important cultural factors such as gender, race/ethnicity, or socioeconomic status that will not be covered in this paper (Lewis 2008).

Therefore, the purpose of this review was to review and evaluate recent practices (1999–2009) in the measurement of adolescent R/S in health outcomes research. Data were gathered on (a) the most commonly used R/S measures/items, (b) psychometric considerations (whether reported in adolescent samples or not), and (c) developmental considerations for the five most often used measures. Recommendations are made for improving future research involving R/S variables and health outcomes with adolescents. This paper is modeled after a similar paper evaluating the cultural dimensions and appropriateness of the use of R/S measures in African-American samples by Dr. Lisa Lewis (2008).

Methods

Database Search and Article Review

PsychInfo and Pubmed databases were searched for relevant articles from July 1999 to July 2009. Search terms included a combination of religion/religiosity/religious/religiousness, spiritual/spirituality, adolescents/children/youth, and health. Inclusion criteria were articles that (1) assessed the relationship(s) between a religious or spiritual factor and an adolescent health outcome; and (2) were written in English. The first 2 authors (SC; MM) reviewed all of the identified articles for inclusion criteria, and after discussion and 100% agreement, retained the final articles to be included in the review. Data extracted from each article included the following: (1) the measure(s) and/or item(s) used to assess R/S; (2) the reported psychometrics of the R/S measure in the adolescent sample; and (3) whether the measure(s) and/or item(s) incorporated developmental considerations (e.g., social support from a religious youth group or measure specifically developed for adolescents). Articles were included as having utilized an R/S measure if they used the entire R/S measure, if they used selected items from a measure (more than half of the original items), or if they used different versions of the measure (e.g., the 36-item version of the RCOPE or the 14-item version of the RCOPE). Given the large number of studies and R/S measures identified, the top five R/S measures were reviewed in more detail in the text with data on all other measures presented in table form (Table 1). Initial psychometric data and psychometrics of the R/S measures from the reviewed studies with adolescents will both be presented.

Results

A total of 100 articles met criteria for inclusion in this review (Table 1). Of the articles reviewed, most studies assessed the relationships between R/S and health risk behaviors (n = 59), followed by mental health outcomes (n = 39), and chronically ill/physical health outcomes (n = 4) (categories are not mutually exclusive). Most studies reported on national or state-wide datasets (n = 36), followed by school-based samples (n = 33), clinic/hospital-based samples (n = 18), and community centers/sites (n = 13).

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Measures/Items Used Previously

The five measures most often used were the Brief Multidimensional Measure of Religiousness/Spirituality (*n* = 8) (with *n* reflecting number of studies that used the measure; (Fetzer Institute & Group 1999) and the Spiritual Well-Being Scale (*n* = 8) (Ellison 1983), followed by versions of the RCOPE (Pargament et al. 2000) (religious coping) (*n* = 4), the Religious Orientation Scale (Allport and Ross 1967) (*n* = 4), and the Systems of Belief Inventory (Holland et al. 1998) (*n* = 4) (see Table 2). The most commonly used individual items were as follows: frequency of religious service attendance (*n* = 43), personal importance of religion (*n* = 38), religious affiliation (*n* = 17), and frequency of prayer (*n* = 12) (Table 2). Of note, of those assessing mental health outcomes (*n* = 39), over half of the studies (*n* = 20) used one of the aforementioned R/S measures (as these were also the clinic- and school-based samples). Conversely, of those assessing health behaviors (*n* = 59), the majority used a measure other than the 5 aforementioned measures (*n* = 52) and were also primarily assessed with national or state samples.

Almost two-thirds of studies (*n* = 59) measured R/S with only one or two items/ dimensions (e.g., religious attendance and importance of religion), while others (*n* = 39) utilized a multidimensional approach (e.g., religious values, religious behaviors, and religious coping).

Psychometrics of Measures Overall

Studies were variable in reporting psychometrics for R/S measures. Less than half (*n* = 43) reported psychometrics for the present study (usually Cronbach's alphas) and less than 20% (*n* = 19) reported psychometrics from previous studies of adolescents (Table 1). Few (*n* = 5) reported factor analyses aimed at understanding the underlying theoretical constructs of R/S measurement in adolescents. Over two-thirds of the studies (*n* = 69) used investigator-developed measures/items, some of which provided no psychometric data.

Developmental Considerations Overall

Many studies (*n* = 43) used adult-developed measures that may not be developmentally relevant for adolescents (e.g., no mention of peer or parent religious influence). Relatively few (*n* = 15) included adolescent-specific R/S measures (Age-Universal I-E Scale; (Maltby 2002) or items (e.g., how religious is your family?) accounting for developmentally relevant issues such as involvement in a religious youth group, parental religiosity, and/or age-appropriate language.

Psychometric and Developmental Considerations of Top 5 Most Often Used Measures

Each of the 5 most often used measures will be reviewed including the following: (a) description of the measure; (b) original psychometrics; (c) psychometrics with adolescents and/or in reviewed articles; and (d) developmental considerations. This material is intended to be useful when selecting a measure for assessing R/S in an adolescent health outcomes study.

Brief Multidimensional Measure of Religiousness/Spirituality (*n* = 8)

Description of Measure—In 1995, the Fetzer Institute and the National Institute on Aging convened a meeting of religion–health experts with a mission of "developing items for assessing health-relevant domains of religiousness and spirituality" for use in health outcomes research (Fetzer Institute 1999). The product was a report on 12 domains (e.g., daily spiritual experiences, forgiveness) with independent measures for each domain. Also reported on was the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), comprised of key items from each of these domains (Harris et al. 2008). The BMMRS includes 11 domains assessing the following: (1) Daily Spiritual Experiences; (2)

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Values/Beliefs; (3) Forgiveness; (4) Private Religious Practices; (5) Religious and Spiritual Coping; (6) Religious Support; (7) Religious/Spiritual History; (8) Commitment; (9) Organizational Religiousness; (10) Religious Preference; and (11) Overall Self-Ranking. In the original 1999 report on the measure, given a lack of consensus by the working group, items from the Meaning subscale were not officially included in the BMMRS (though 2 suggested items are provided on the form) (Fetzer Institute 1999). The 38-item (40 including the two suggested items) measure includes items from each subscale that are typically comprised of one to six items scored on a Likert-type scale. Since the BMMRS was developed to assess each of the aforementioned constructs separately, subscales are scored independently, and no total sum score is available. Many of the subscales also include long forms with additional items that may be used in relevant situations (Fetzer Institute 1999).

Original Psychometrics—Psychometric properties of the BMMRS and the individual domain scales in adults are variable and are reported in the online report of the measure (Fetzer Institute 1999). Multiple authors have examined the factor structure of the BMMRS in a variety of samples with a variety of results (Johnstone et al. 2009; Stewart and Koeske 2006).

Psychometrics with Adolescents—Of the 5 most commonly used R/S measures identified in this review, the BMMRS is the only one on which extensive psychometric data for adolescents has been published (Harris et al. 2008). The Harris article was not included as one of the 100 articles in this review as it did not assess a health outcome. The reliability and validity of the BMMRS with adolescents were assessed in a sample of 305 adolescents visiting primary care clinics in Boston, MA (Harris et al. 2008). Cronbach's alphas were ≥. 70 for the Daily Spiritual Experiences, Positive Religious/Spiritual Coping, Religious Support, Organizational Religiousness, and Meaning subscales. Test–retest reliability was ≥. 70 for all subscales except the Meaning and Belief subscales.

Psychometrics in Selected Articles—Eight studies using the BMMRS met inclusion criteria for this paper. In those studies that reported psychometrics ($n = 4$), measures of internal consistency were as follows: Daily Spiritual Experiences Subscale, α = .88–.92; Private Religious Practices Subscale, α = .74–.86; Organizational Religiousness Subscale, α = .73–.82; Positive Religious Coping Subscale, α = .78–.87; Negative Religious Coping Subscale, α = .40–.73; Positive Religious Support Subscale, α = .86–.90; Negative Religious Support Subscale, α = .77–.83; Congregation Beliefs Subscale, α = .82; Congregation Problems Subscale, α = .70; Religious/Spiritual History Subscale, α = .30; Forgiveness Subscale, α = .72; Meaning Subscale, α = .71; and Self-Ranked Religiousness, α = .84–.86 (Desrosiers and Miller 2007; Dew et al. 2008; Pearce et al. 2003; Scott et al. 2006).

Developmental—While the BMMRS's strength is that it is a multidimensional measure that was developed by R/S-health experts, it was still developed for use in adults, and as such, misses key developmental issues for this population. For example, socially, while the measure asks frequency of religious service attendance and religious affiliation, it does not examine parental religious attendance or parental religious affiliation, both of which have been shown to be associated with adolescent health outcomes (Manlove et al. 2006; Wills et al. 2003a, b). In addition, while the BMMRS asks about organizational religiousness, it does not ask about religious youth groups or the possible social influence of peers in one's religious congregation. Furthermore, while the BMMRS does examine daily spiritual experiences (for example feeling God's presence or feeling God's love), it does not assess the potential influence of a pastor or church leader that an adolescent may turn to for support in a time of crisis or as a role model. From a cognitive standpoint, this measure may be understandable to an adolescent (though without actually testing it, this is just a hypothesis).

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It does not appear to require much abstract thinking, and most words/phrases seem to be understandable to an adolescent (however, as always, particular attention should be paid when administering to younger adolescents or those with lower levels of reading ability (e.g., "I am spiritually touched by the beauty of creation" might be difficult for some adolescents). This measure (as with other measures) could be tested in a "cognitive interviewing" format to determine whether adolescents understand these constructs as the authors intended. A certain level of emotional development is required for this measure. For example, adolescents might have trouble responding to "I feel deep inner peace and harmony" if he/she has not yet developed the ability to reflect on his/her emotional state. However, most of the questions on the BMMRS do not involve emotional states (e.g., ask about religious behavior or religious commitment) and thus may be not as dependent on levels of emotional development.

Spiritual Well-Being Scale, SWBS (*n* = 8)

Description of Measure—Developed by Paloutzian and Ellison (Ellison 1983), the Spiritual Well-Being Scale (SWBS) assesses overall spiritual well-being and has been used in hundreds of studies with adult samples (Compton and Furman 2005; Dunn and Shelton 2007; Sherman et al. 2005). In this measure, overall spiritual well-being is conceptualized as an aggregate of religious well-being, defined as "the strength of one's relationship with God," and existential well-being, "a sense of satisfaction and purpose in life" (Rubin et al. 2009). Religious well-being and existential well-being are each measured using ten items. Examples of items include religious well-being, "I have a personally meaningful relationship with God" and existential well-being, "I believe there is some real purpose for my life." Participants are asked to respond to items on a five-point Likert scale (strongly disagree to strongly agree). Items are then summed, resulting in possible subscale scores ranging from 10–50, with higher scores representing higher levels of well-being. A measure of overall spiritual well-being (range = 20–100) can then be calculated by summing both subscale scores.

Original Psychometrics—The SWBS was originally developed using data provided by 206 White college students attending religiously affiliated universities (Boivin et al. 1999). Results of initial validation with a sample of 100 White college students resulted in Cronbach's alphas of 0.89 (Spiritual Well-Being Scale), 0.87 (Religious Well-Being Scale), and 0.78 (Existential Well-Being Scale (Ellison 1983).

Psychometrics in Selected Articles—Our review indicated eight studies using the SWBS with adolescents. Of those eight, three studies reported Cronbach's alphas for the SWBS, with values ranging from .78 to .94 (Cotton et al. 2009b; Cotton et al. 2005; Hendricks-Ferguson 2006). Test–retest reliability was reported in one study, $r = .80$ (Rubin et al. 2009).

Developmental—Potential social influences of peer or parent religiosity are not present in this measure. This measure does, however, by its very nature, tap into one's relationships with a God/Higher Power and how this relationship affects one's well-being. Considering the resilience literature that describes the importance of at least one attachment figure for any developing child/adolescent (Masten and Reed 2002), this relational/social aspect of this measure has a unique component concerning a possible relationship with God/Higher Power. At the same time, however, reflecting on one's well-being (emotional states included) and how this relates to a God, requires a certain level of emotional development (and abstract thinking) that some adolescents may not have yet attained. Cognitively, the items appear to be fairly understandable for adolescents (e.g., I find meaning/purpose in my life). Again, formal testing would be necessary to confirm this.

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Religious Coping Questionnaire, RCOPE (*n* = 4)

The original Religious Coping Questionnaire (RCOPE) is a 105-item theoretically based measure that assesses positive and negative religious coping methods with respect to five key religious functions including the following: meaning, control, comfort/spirituality, intimacy/spirituality, and life transformation (Pargament et al. 2000). The original RCOPE is comprised of 21 subscales with five items each. Participants respond to items on a four-point Likert scale with responses ranging from 0 “not at all” to 3 “a great deal.” A shorter version has been used in subsequent studies, namely a 36-item version with responses ranging on a 5-item Likert scale from “never” to “very often.” Three types of religious coping are assessed including self-directive, deferring, and collaborative. An even shorter 14-item version, the Brief RCOPE was used in one study with adolescents (Cotton et al. 2009b). This version has 7-items each that assess negative and positive religious coping. One study reported a 63-item Polish version of the RCOPE used with adolescents (Szewczyk and Weinmuller 2006).

Original Psychometrics—An exploratory factor analysis of the original RCOPE with 540 primarily white college students indicated a 17-factor solution, which retained eight of the 21 subscales in their original form and resulted in “conceptually meaningful” factors (Pargament et al. 2000). Cronbach’s alphas were greater than .80 for all subscales except the Marking Religious Boundaries and the Reappraisal of God’s Powers subscale. Results of a subsequent confirmatory factor analysis with 551 elderly hospital patients indicated that the factors provided an acceptable fit to the data (Pargament et al. 2000). Cronbach’s alphas for this original sample were acceptable (>.75) for all subscales except for the Passive Religious Deferral subscale and the Reappraisal of God’s Powers subscale. The 36-item version has reported internal consistencies ranging from .91 (deferring) to .97 (collaborative) (Molock et al. 2006).

Psychometrics in Selected Articles—Of the four articles using the RCOPE, three reported Cronbach’s alphas (Molock et al. 2006; Spann et al. 2006; Szewczyk and Weinmuller 2006). Internal consistencies with adolescent samples were as follows: collaborative, $\alpha = .97$; self-directing, $\alpha = .94$; and deferring, $\alpha = .95$. The Polish version reported a total Cronbach’s alpha of 0.94 (Szewczyk and Weinmuller 2006).

Developmental Considerations—Our review indicated four studies with adolescents using the RCOPE measure (albeit different versions). The RCOPE was developed for use in adults and is one of the more widely used R/S coping measures in the health outcomes literature (Cotton et al. 2006; Phelps et al. 2009). The strengths of this measure are that it is theoretically driven, is multidimensional, and has been through various rigorous psychometric evaluations. However, this measure does not address many social developmental issues pertaining to adolescents. For example, while it taps into many dimensions of how people use their faith to cope with stressful situations, it does not address the important role of parental religious coping (for example, how a parent might model the use of religion to cope). It also does not address peer religious coping (e.g., how a peer might find prayer helpful and how this might influence an adolescent to try a similar or different method of coping), or religious youth group as a resource related to religious coping that adolescents may turn to when in distress. From a cognitive standpoint, most questions are worded in ways that would appear understandable by adolescents (e.g., “God solves problems for me without me doing anything”; “I focused on religion to stop worrying about my problems”). However, a level of cognitive abstraction may be required for an item such as “Questioned the power of God.” From an emotional development perspective, an adolescent must be able to identify and label concepts such as anger, love, and devotion—in order to respond to this measure.

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Religious Orientation Scale (*n* = 4)

Allport and Ross' Religious Orientation Scale (Allport and Ross 1967) was developed to examine an individual's intrinsic (i.e., finding motive in religion) and extrinsic (i.e., using religion for personal ends) tendencies. The Religious Orientation Scale includes a 10-item intrinsic subscale and a 10-item extrinsic subscale, intended to be examined separately. Participants respond to items on a five-point Likert scale with responses of one indicating the most intrinsic response, and a response of five indicating the most extrinsic response. Sample items include intrinsic subscale, "My religious beliefs are what really lie behind my whole approach to life" (1 "definitely disagree" to 5 "definitely agree") and extrinsic subscale, "What religion offers me most is comfort when sorrows and misfortune strike" (5 "definitely not so" to 1 "definitely so").

Original Psychometrics—In samples of adults, the Religious Orientation Scale has acceptable reliability, intrinsic subscale, $\alpha = .81–.93$, and extrinsic subscale, $\alpha = .69–.85$ (Donahue 1985). Test–retest reliability over a two-week period was .84 for the intrinsic subscale and .78 for the extrinsic subscale (Burris 1999).

Psychometrics in Selected Articles—Of the four articles using the Religious Orientation Scale, two reported psychometrics with adolescents (Cohen et al. 2005; Zaleski and Schiaffino 2000). Results indicated acceptable internal consistency, intrinsic subscale, $\alpha = .87–.88$; extrinsic subscale, $\alpha = .79$. Split-half correlations were also reported: intrinsic subscale, $r = .80$; extrinsic subscale, $r = .61–.71$ (Cohen et al. 2005).

Developmental Considerations—As with the other "top 5" measures reviewed here, this measure was developed and normed for use with adults. The Religious Orientation Scale highlights 2 important dimensions of spirituality, namely the external "useful" aspects of R/S (e.g., to provide distraction or solace) as well as the internal aspects of R/S, someone who "lives" one's religion. While these 2 dimensions are key to assess in adolescents who may or may not exhibit both of these aspects simultaneously (regardless of the importance of R/S to the individual), it does not address potentially important social religious influences on the adolescent. While this original measure has been used in four studies with adolescents, Gorsuch and Venable (1983) have developed and reported on an "Age-Universal" I-E Scale, citing that the original Allport and Ross scale is probably "not suitable for evaluating religious orientations in children/adolescents because of the reading comprehension level required." Our review indicated 3 studies that used this Age-Universal I-E scale, though more had used the original Religious Orientation Scale (see Table 1). The Age-Universal contains items relevant to adolescents, for example, "I go to church mostly to spend time with my friends." In addition, the emotional and cognitive development required to answer most of the questions appears reasonable. For example, items include awareness of "a sense of God's presences," "praying for relief and protection," and "it doesn't matter what I believe so long as I am good."

Systems of Belief Inventory (*n* = 4)

Holland and colleagues (Holland et al. 1998) developed the Systems of Belief Inventory for use in research examining quality of life in individuals with chronic illnesses. Items included in the measure were designed to measure four constructs: (1) deriving meaning from an existential perspective; (2) frequency of religious practices or behaviors; (3) relationship to God/a Higher Power; and (4) social support derived from religious/spiritual community (Holland et al. 1998). Originally, 35 items were developed to measure the aforementioned domains and administered to 12 hospitalized patients with cancer in a structured interview format (Holland et al. 1998). Following the administration of the initial questions, additional items were added, resulting in a total of 54 items, with at least 12 items corresponding to

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each construct (i.e., “Religion is important in my day-to-day life”; “I follow my religion’s guidelines for prayer”; “There is purpose and meaning to life”; and “My spiritual beliefs are a source of hope”). The 54 item measure, the SBI-54, asks participants to respond to items on a 4-point Likert scale ranging from “none of the time” or “strongly disagree” to 3 “all of the time” or “strongly agree.”

Due to time and space constraints relevant to many research studies, the SBI-54 was shortened to create the Spiritual Belief Inventory 15-Item version (SBI-15). Results of a principal components analysis indicated that the SBI-15 provides an overall measure of spirituality/religiosity as well as subscale scores representing beliefs and social support (Holland et al. 1998).

In order to create a measure for use beyond patients with life-threatening and chronic illnesses, the SBI-15 was revised by rephrasing one item (Holland et al. 1998). In the revised scale, the item “Prayer or meditation has helped me cope with my diagnosis” was changed to “Prayer or meditation has helped me cope during times of serious illness.” The revised form of the measure, the SBI-15R, has been used with numerous samples, including individuals in New York, Israel, and Germany (Holland et al. 1998).

Original Psychometrics—The SBI-54 was initially administered to a convenience sample of 301 healthy adults in New York City. Resulting analyses indicated good internal consistency for the overall scale $\alpha = .97$ (all subscales, $\alpha \geq .85$), and a test–retest correlation coefficient of .95 (Holland et al. 1998). In the same sample, the SBI-15 also demonstrated high internal consistency, $\alpha = .93$ (beliefs subscale, $\alpha = .92$; social support subscale, $\alpha = .89$) and a high test–retest correlation coefficient, $r = .95$ (Holland et al. 1998).

Psychometrics of Selected Articles—All four studies using the Systems of Belief Inventory reported psychometrics. Cronbach’s alphas ranged from .71 to .96 (Lewis et al. 2006; McCuller et al. 2001; Venning et al. 2007). Test–retest reliability as reported from a sample of adolescents and adults was .95 (Baider et al. 1999).

Developmental Considerations—A strength of the SBI-15R is that it was developed to be used in consort with quality of life measures and specifically when examining mediating influences of R/S on health outcomes (Holland et al. 1998). With items assessing spiritual coping, prayer, and hope, it is a measure that could be considered “relevant” for adolescents (Smith and Lundquist-Denton 2005). Specifically, it asks about enjoying attending religious or spiritual groups (which could be strengthened by specifying “youth” group for many adolescents) and as such, does tap into some of the possible peer religious aspects. Cognitively, most questions should be understandable (though “peace of mind” might be the most difficult abstract construct to understand for a younger adolescent). There are unfortunately no questions assessing parental religiosity, but a question does ask whether someone would “seek out people in my religious or spiritual community when I need help,” which might imply to an adolescent a youth group leader or a church leader that an adolescent may turn to for support. The measure does require a level of both emotional and cognitive development, for example, asking questions about existential perspectives on life and death and reflecting on one’s relationships with a Higher Power (Baider et al. 1999).

Discussion

This review was undertaken to examine and evaluate recent trends in measuring R/S in adolescent health outcomes research in order to inform and improve upon future investigations. While religious/spiritual (R/S) influences on adolescent health outcomes have been studied for decades, most R/S measurement tools were developed for use in adults

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and thus may not be developmentally relevant for adolescents. As researchers focus more on understanding mediating (and/or direct) pathways by which R/S influences adolescent health, a critical examination of whether currently used measurement tools are developmentally relevant enough to answer these mediating questions is necessary. In addition, as researchers assessing R/S and health in adolescents make choices regarding appropriate measurement tools, a review of most often used measures including reported psycho-metrics could be useful in making the best determinations. The results of this review indicated three critical areas to consider and ensuing recommendations for conducting R/S research with adolescents and choosing an appropriate R/S measure: (1) developmental considerations of the measure (e.g., peer influences or abstract reasoning required); (2) psychometrics of measures; and (3) multidimensional aspects of R/S factors that may influence health.

Of the 100 articles reviewed, relatively few ($n = 15$) included adolescent-specific R/S measures or items accounting for developmentally relevant issues such as involvement in a religious youth group, parental religiosity, or age-appropriate language. For example, items that address social developmental issues include the following: “How important do you think it is for teens to attend religious services?” (Ball et al. 2003); “Are you actively involved in a religious youth group?” (Jeynes 2003); and “How religious do you wish your family would be?” (Benda et al. 2006). The most often R/S items used overall, frequency of religious service attendance, personal importance of religion, and religious affiliation, do not specifically address these social influences. Given the relative importance of peers’ and parents’ beliefs, values, and behaviors to adolescent health, it would seem logical that R/S measurement in adolescents should incorporate these contextual factors much the way the Child Depression Inventory (Kovacs 1985) or the KidCope (Spirito et al. 1988) include these factors. In addition, the cognitive development required (and particularly level of abstract thinking) of many of these measures may be beyond what is reasonable for many adolescents. For example, the ability to reflect forward on existential issues or to contemplate one’s relationship to God and how it affects one’s well-being—requires both cognitive and emotional skills that develop over time as a process. Of particular salience is the observation that many R/S measures incorporate emotional recognition, emotional understanding, and emotional perspective-taking that may or may not be present in an adolescent. For example, while many 18-year-olds may be able to describe an internal emotional state (and thus answer a question on a measure about emotion), an immature 12-year-old may not have yet developed these capacities regarding emotions. Given the rapidly changing growth and development of adolescents, we must be keenly aware of the differences that exist even between an 11-year-old, a 14-year-old and an 18-year-old.

Some studies, however, did report R/S measures specifically developed for use with adolescents, with attention to relevant social, cognitive, and emotional development issues. For example, the Religious Behavior Questionnaire developed by Schapman and Inderbitzen-Nolan (Schapman and Inderbitzen-Nolan 2002) includes assessing whether the adolescent feels pressured or forced by parents to engage in religious activities and whether the adolescent attends religion class; the Religious Attitudes and Practices Survey includes 4 items on parental religiosity (Kliewer and Murrelle 2007); and Lewis and colleagues (Lewis et al. 2006) modified items on the Systems of Belief Inventory originally developed for a college-educated high SES sample for use in their sample of younger, less-educated adolescents (e.g., “I feel certain that God in some form exists” became “I feel certain that there is a God”). Given space constraints, we did not assess articles for spiritual development issues, though these could easily be just as relevant to consider.

A second critical area to consider is examining and reporting relevant psychometrics of R/S measures. Only one-third of studies reported psychometrics of the measure used and less

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than one-fifth reported that the measure had been previously tested with adolescents. Without examining the underlying constructs of a measure and whether it is psychometrically sound in adolescents, it remains difficult to tease apart the "key ingredients" of R/S that influence adolescent health. For example, it could be possible that items mean different things to adults than to adolescents (e.g., "Decided the Devil made this happen" from the Brief RCOPE (Pargament et al. 2000), and it makes interpretation of results difficult when items were developed for use in adults. Cognitive interviewing with adolescents as part of a validation study would be useful to determine what an adolescent means when responding to a particular question (e.g., "I try hard to carry my religion over into all other dealings in life"). A handful of studies did report more in depth psychometric testing of R/S measures specifically for use with adolescents. For example, Goggin and colleagues (Murray et al. 2006) developed and validated the alcohol-related God locus of control scale for adolescents (AGLOC-A) using focus groups, exploratory factor analyses, tests for construct validity, and internal consistency and test–retest reliability estimates. Ball et al. (2003) developed a religiosity scale guided by previous theories of religiosity (Chatters et al. 1992; Potvin and Lee 1982), conducted a confirmatory factor analysis and reported internal consistency of the measure. Attention to psychometric issues such as these increases the likelihood that the R/S constructs being assessed are relevant to adolescents, enabling an increased understanding of how R/S influences health outcomes.

Thirdly, investigators used a wide variety of tools to assess R/S, ranging from a single item in a large database to several measures capturing the multidimensionality of R/S. The use of only one or two items may be due to an interest in including R/S in studies with other primary aims; however, this approach does not account for the multidimensional nature of R/S. Experts in the religion–health literature emphasize the importance of considering multiple R/S dimensions including religious attitudes, religious behaviors (prayer or attendance), religious values/beliefs, meaning and/or transcendence (Koenig et al. 2001). Utilizing multidimensional R/S measures allows for a deeper understanding of which specific dimensions of R/S are linked to health (or not), thus improving our ability to integrate findings into health promotion efforts. For example, while there is an association between religiosity (usually religious service attendance) and sexual health behavior (e.g., later sexual initiation, fewer sexual partners) (Cotton and Berry 2007), it is difficult to determine what the key ingredient is impacting sexual behavior with religious attendance as the "distal marker" of likely more proximal religious influences (e.g., religious values).

Over the last 2 decades in particular, the fields of religion and health, adolescent medicine, and psychology have contributed a great deal to our understanding of the links between R/S factors and health in adolescents. Important next steps to advance the field include the following:

1. *Revise adult-R/S measures or create psychometrically sound R/S measures developmentally specific to adolescents*. One option to understand how an adolescent uses R/S to cope is to qualitatively assess what adolescent religious coping item(s) might be missing from an adult religious coping measure (e.g., peer support from religious youth group) and then quantitatively test the psychometric properties of the adapted version. Another option is to develop an adolescent-specific measure with due attention to developmental theory (including levels of social, cognitive, emotional, cultural, and/or spiritual development).
2. *Report psychometrics*. After an appropriate measure has been chosen, psychometrics specific to adolescents should be reported (both past and present). In addition, the inclusion of cognitive interviews to ensure that the measure is capturing developmentally relevant constructs would enhance measurement development. Factor analyses and other techniques using adolescent datasets would

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also help elucidate whether these constructs are similar or different in adults, or for adolescents of varying ages or race/ethnicities.

3. *Use multidimensional R/S constructs*. The adult literature has demonstrated that it is possible to have multidimensional measures which remain brief. For example, the Duke Religion Index (Koenig et al. 1997) assesses organized religious activity, non-organized religious activity, and intrinsic religiosity with 5 brief items. A similar approach could be used with adolescents. The Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), (Fetzer Institute 1999) has been used with adolescents and includes 40-items to assess constructs such as religious coping, forgiveness, and spiritual meaning. Thus, a multi-dimensional approach does not need to be overly burdensome to participants.

Adhering to these recommendations will inevitably improve our ability to answer the complex questions about how R/S and health outcomes are related in adolescents and take the next empirically supported steps to advance our adolescent health promotion efforts.

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Table 1

Articles reviewed

Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Baider et al. (1999)	Systems of Belief Inventory		Test–retest reliability, .95
Ball et al. (2003)	(1) "Do you believe in God?" (2) "How religious are you?" (3) "How important do you think it is for teens to attend religious services?" (4) "How often do you read the Bible or other religious books, magazines, or stories?" (5) "How often do you say grace before you eat?" (6) "How often do you pray?" (7) "How often do you go to church services?" (8) "How often do you ask someone to pray for you?"		Confirmatory factor analysis indicated that all eight items loaded at .45 or better; $\alpha = .71$
Benda and Corwyn (1999)	Self-reported importance of religion		
Benda et al. (2006)	(1) "How religious are you?" (2) "How religious is your family?" (3) "How religious do you wish your family would be?" (4) "How important is religion in your life?", and (5) "Do you believe in God?"		$\alpha = .79$
Benjet et al. (2007)	(1) Religion, (2) frequency of attending mass or any other kind of religious services, (3) personal importance of religion		
Bersamin et al. (2006)	(1) "How often do you go to church or other religious services?" (2) "How often do you go to other church or religious activities?" (3) "How important or unimportant is religion to you, personally, in your everyday life?"		A factor analysis identified a single religiosity factor
Beyers et al. (2004)	Risk and Protective Factor Scales		
Bolland et al. (2005)	"How important is religion to you?"		
Brega and Coleman (1999)	(1) Church attachment, (2) church attendance		
Brown et al. (2001)	(1) "How often do you attend religious services?" (2) "How often do you pray?" (3) "How important is religion in your life?" (4) Literal interpretation of Bible		
Cerqueira-Santos et al. (2008)	(1) Religion/spirituality have been important in my life, (2) I usually attend religious services, (3) I usually read sacred scriptures or pray, (4) I usually thank God for the things that happen in my life, (5) I ask God for help with my problems, (6) I usually read sacred scriptures or pray when facing difficulties,(7) I seek help from my religious institution		$\alpha = .87$
Cohen et al. (2005)	Religious Orientation Scale; Religious affiliation		ER, $\alpha = .79$, split-half correlation .71; IR, $\alpha = .87$, split-half correlation .80
Cotton et al., (2009a)	(1) "Do you believe in God/a Higher Power?" (2) "Religion is important in my life, (3) "How many times in the last 30 days have you attended religious services?" (4) "How many times in the last 30 days have you prayed?" (5) "How many times in the last 30 days have you meditated?" (5) "To what extent do you consider yourself a religious person?" (6) "To what extent do you consider yourself a spiritual person?" Functional Assessment of Chronic Illness Therapy–Spirituality (Facit-Sp) Scale Religious Coping Questionnaire		
Cotton et al. (2009b)	Spiritual Well-Being Scale	Test–retest reliability, religious well-being, .88–.99; existential well-being, .73–.98;	$\alpha = .78–.94$

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Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
		spiritual well-being, .82–.99 Religious well-being, α = .90; existential well-being, α = .80; overall well-being, α = .84	
Cotton et al. (2005)	(1) "How important is religion in your life?" (2) "Do you believe in God/Higher Power?" Spiritual Well-Being Scale	Spiritual Well-Being Scale: test–retest reliability, .73–.99; α = .78–.94	Spiritual Well-Being Scale: α = .87
Davis et al. (2003)	Spiritual Well-Being Scale; Religious Orientation Scale	Test–retest reliability: Total Spiritual Well-Being .96; Religious Well-Being .86; Emotional Well-Being .86 Total Spiritual Well-Being, α = .89; Religious Well-Being, α = .86; Emotional Well-Being, α = .78	
Desrosiers and Miller (2007)	Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)	Daily Spiritual Experiences Subscale, α = .91; Forgiveness Subscale, α = .66; Positive Religious Coping Subscale, α = .81; Negative Religious Coping Subscale, α = .54; Congregation Beliefs Subscale, α = .86; Congregation Problems Subscale, α = .64	Daily Spiritual Experiences Subscale, α = .88; Forgiveness Subscale, α = .75; Positive Religious Coping Subscale, α = .78; Negative Religious Coping Subscale, α = .40; Congregation Beliefs Subscale, α = .82; Congregation Problems Subscale, α = .70
Dew et al. (2007)	Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)		
Dew et al. (2008)	Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)		Daily Spiritual Experiences Subscale, α = .92; Private Religious Practices Subscale, α = .86; Organizational Religiousness Subscale, α = .82; Religious and Spiritual Coping Subscale, α = .87; Negative Religious and Spiritual Coping Subscale, α = .73; Religious Support Subscale, α = .86; Negative Religious Support Subscale, α = .77; Overall Self- Rating Subscale, α = .86; Religious/Spiritual History Subscale, α = .30; Forgiveness Subscale, α = .72; Meaning Subscale, α = .71

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Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Doss et al. (2007)	"How often do you participate in church/ religious activities?"		
Dunn (2005)	"How important is religion in your life?"		
Ens and Bond (2007)	Age-Universal I-E Scale-12 Religiosity Scale		α = .90
French et al. (2008)	Daily Spiritual Experience Scale; Consistency with which adolescents practiced behaviors expected of Muslim youth in Indonesia		α = .85 at time 1; α = .84 at time 3
Goggin et al. (2007)	Religious Background and Behavior (RBB) Questionnaire Alcohol-Related God Locus of Control Scale		α = .82; test–retest reliability, *r* = .90; factor analysis
Good and Willoughby (2006)	"How often in the last month have you gone to church?"; "I believe in God or a higher power."		
Greening and Stoppelbein (2002)	Doctrinal Orthodoxy Scale; Age-Universal I-E Scale	Doctrinal Orthodoxy Scale, α = .91; Age-Universal I-E Scale, Correlates with intrinsic religiosity, *r* = .55	
Grunbaum et al. (2000)	"During the past year, how often have you attended religious services?"		
Hardy and Carlo (2005)	(1) "How important is religion in your life?" (2) "How often do you go to church? (3) "How often do you attend church related activities other than worship service?" (4) "I am a spiritual person" (5) "I practice my religion" (6) "My faith never deserts me during hard times" (7) "My faith makes me who I am"		α = .93
Hardy and Raffaelli (2003)	(1) "How important would you say religion is to you?" (2) "In the past year, about how often have you attended religious services?"		
Hawke et al. (2005)	Personal Experience Inventory items for Spiritual Isolation Scale		
Hendricks-Ferguson (2006)	Spiritual Well-Being Scale	α = .87–.99	α = .93
Herman-Stahl et al. (2006)	(1) "Your religious beliefs are a very important part of your life"		
Hodge et al. (2001)	Index of Core Spiritual Experiences (INSPIRIT); Religious participation	α = .90	α = .64
Holder et al. (2000)	Age-Universal I-E Scale; Frequency of attendance at religious services; Self-perceived personal importance of religion; Belief in God		Internal scale, α = .70; Extrinsic scale, α = .66
Hubbard-McCree et al. (2003)	(1) "How often do you attend religious or spiritual services?" (2) "How often do you pray or meditate?" (3) "How often do you talk to others about religious or spiritual concerns?" (4) "How often do you talk with a religious or spiritual leader?"		
Jeynes (2003)	(1) "How religious are you?" (2) "Are you actively involved in a religious youth group?" (3) "How often do you attend church or another place of worship?"		
Jones and Benda (2004)	Spiritual Well-Being Scale	α = .86	
Jones et al. (2005)	(1) Religious affiliation; (2) Frequency of attendance at religious services		
Kelley and Miller (2007)	Brief Multidimensional Measure of Religiousness/ Spirituality (BMMRS)		
Kliewer and Murrelle (2007)	Religious Attitudes and Practices Survey		Belief in God, α = .88

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Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Knight et al. (2007)	Brief Multidimensional Measure of Religiousness/ Spirituality (BMMRS)	Private Religious Practices, α = .76; Religious Support, α = .95; Daily Spiritual Experiences, α = .94; Forgiveness, α = .68; Positive Religious and Spiritual Coping, α = .88; Negative Religious and Spiritual Coping, α = .54	
Koenig et al. (2008)	(1) Frequency of attending religious services, (2) Frequency of prayer, (3) Frequency of reading scriptures, (4) Frequency of discussing religious teachings, (5) Frequency of deciding moral actions for religious reasons, (6) Frequency of observing religious holidays, (7) Membership in religious youth groups, (8) Having friends with similar beliefs, (9) Overall importance of religion in daily life		14-year-olds, α = .84; 18-year-olds, α = .88
Koffi and Kawahara (2008)	Religious affiliation		
Kogan et al. (2005)	(1) "Do you consider yourself religious?" (2) "In the past year, about how often have you attended religious services?" (3) "How much time do you spend in religious activities?"		α = .64
Laflin et al. (2008)	(1) Frequency of prayer; (2) Self-rated importance of religion		
Lammers et al. (2000)	"How religious are you?"		
Lazarus et al. (2009)	Religious affiliation		
Le et al. (2007)	(1) "How important is religion to you?" (2) "How often do you pray?" (3) "In the last 12 months, how often did you attend religious services?" (4) "How often do you participate in youth activities in churches, synagogues, and other places of worship?"; Religious affiliation		
Lee et al. (2007)	"To what extent do you think you are religious?"		
Lewis et al. (2006)	Systems of Belief Inventory: Spirituality Scale	α = .92	α = .91
Markstrom (1999)	(1) "How often do you attend religious services?" (2) "Have you participated in a Bible study group?" (3) "Have you participated in a youth group?"		
Marlow et al. (2009)	Religious affiliation		
Marsiglia et al. (2005)	"How involved are you in your religion?"		
Mason and Windle (2002)	(1) "How important is your religion?" (2) "How often do you attend church activities?"		
Mason and Windle (2001)	(1) "How important is your religion?" (2) "How often do you attend church activities?"		Religious importance: test– retest reliability = .68; Religious attendance: test– retest reliability = .80
McCuller et al. (2001)	Systems of Belief Inventory		α = .71
Menning et al. (2007)	(1) Religious affiliation, (2) Agreeing that sacred scriptures are the literal word of God, (3) Frequency of attending religious services, (4) Importance of religion to oneself, (5) Frequency of prayer, (6) Frequency of attending teenage religious activities		α = .69

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Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Milam et al. (2005)	Religious identification		
Milevsky and Levitt (2004)	(1) “How often do you take part in religious activities?” (2) “How important is religion to you?”		
Miller et al. (2000)	(1) “How important are religious or spiritual beliefs in your daily life?” (2) “How often do you attend religious services?” (3) “When you have problems in your life, how often do you seek spiritual comfort?” (4) “When you have decisions to make in your daily life, how often do you ask yourself what God would want you to do?” (5) “Have you been ‘born again’ that is had a turning point in your life when you commit yourself to Jesus?” (6) “Do you encourage people to believe in Jesus and accept Him as their Savior?” (7) “The Bible is the actual word of God to be taken literally, word for word.”		Confirmatory factor analysis of the religiosity items
Miller and Gur (2002)	(1) “How important are religious or spiritual beliefs in your daily life?” (2) “How often do you attend religious services?” (3) “When you have problems in your life, how often do you seek spiritual comfort?” (4) “When you have decisions to make in your daily life, how often do you ask yourself what God would want you to do?” (5) “Have you been ‘born again’ that is had a turning point in your life when you commit yourself to Jesus?” (6) “Do you encourage people to believe in Jesus and accept Him as their Savior?” (7) “The Bible is the actual word of God to be taken literally, word for word.”		
Miller et al. (2001)	(1) Personal importance of religion, (2) Frequency of attendance of religious services, (3) Religious denomination		
Molock et al. (2006)	Religious Coping Questionnaire; Religious Involvement Inventory	α = .91–.94	α = .94–.97; α = .86
Nasim et al. (2007)	“How religious would you say you are?”		
Nasim et al. (2006)	God Support subscale of the Religious Support Scale; (1) “How often do you attend religious services?” (2) “How many church activities, like choir or youth groups are you involved in?”		God Support subscale, α = .91
Nonnemaker et al. (2006)	(1) “How often did you attend religious services?” (2) “How often did you attend other religious activities?” (3) “How important is religion to you?” (4) “How often do you pray?”		Confirmatory factor analysis supported the hypothesis that public and private religiosity are two separate factors
Nower et al. (2004)	COPE	α = .45–.92	
O’Malley and Johnston (2007)	(1) Importance of religion, (2) Frequency of attendance at religious services		
Pearce et al. (2003)	Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)	Private Practice, α = .72; Attendance, α = .82; Positive Religious Support, α = .86; Negative Religious Support, α = .64	Self-Ranked Religiousness, α = .84; Private Practice, α = .74; Attendance, α = .73; Positive Religious Support, α = .90; Negative Religious Support, α = .83
Penfold et al. (2009)	Religious Affiliation; Self-reported religiosity		
Pierce et al. (2007)	Religious Orientation Scale	Intrinsic, α = .90; Extrinsic, α = .78	
Piko and Fitzpatrick (2004)	(1) Religious denomination, (2) Frequency of prayer, (3) Frequency of religious attendance		
Pirkle and Richter (2006)	“How important is religion or spirituality to you?”		

Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Rink et al. (2007)	"How important is religion to you?"		
Rippentrop et al. (2005)	Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)	Daily Spiritual Experiences Subscale, α = .91; Forgiveness Subscale, α = .66; Values/Beliefs, α = .64; Private Religious Practices, α = .72; Positive Religious Coping, α = .81; Negative Religious Coping, α = .54; Benefits of Religious Support, α = .86; Problems with Religious Support, α = .64; Organizational Religiousness, α = .82; Overall Self-Ranking, α = .77	
Ritt-Olson et al. (2004)	(1) "I enjoy attending functions held by my religious or spiritual group." (2) "During times of stress, my spiritual beliefs have been strengthened." (3) "How strongly do you believe that a life force is guiding us?" (4) "How spiritual of a person do you consider yourself to be?" (5) "Do you believe that there is a life force that surrounds everything and everyone?" (6) "How strongly do you believe that there is a life force guiding us?"		Low risk group, α = .80; High risk group, α = .87
Rostosky et al. (2007)	(1) "In the past 12 months, how often did you attend religious services?" (2) "How important is religion to you?" (3) "In the past 12 months, how often did you attend special activities?"		α = .80
Rostosky et al. (2003)	(1) Frequency of attendance at religious services, (2) Frequency of attendance at religious youth activities, (3) Self-rated importance of religion		α = .69
Rubin et al. (2009)	Spiritual Well-Being Scale; Spiritual Involvement and Beliefs Scale		Test–retest reliability $r = .80$
Schapman and Inderbitzen-Nolan (2002)	Religious Background and Behavior (RBB) Questionnaire	α = .85	
Schiff (2006)	COPE; Religious affiliation		
Scott et al. (2006)	Personal Experience Inventory, Spiritual Isolation subscale; Five items from the BMMRS; "How often do you attend church or other religious services?"		Spiritual Isolation subscale, α = .86; BMMRS, α = .66
Sinha et al. (2007)	(1) "How important is religion in your life today?" (2) "In the past month, how many times has your child attended organized religious worship services?"—Parent (3) "Does your child participate in any organized program offered by a religious organization?"—Parent		
Spann et al. (2006)	Religious Coping Questionnaire	α = .91–.94	α = .94–.97
Steinman and Zimmerman (2004)	"How often do you attend church or other religious services?"		
Stewart and Bolland (2002)	(1) "About how often do you go to church, worship services, or other religious activities?" (2) "How important is religion to you?" (3) "How often do you read or study a holy book?"		
Szewczyk and Weinmuller (2006)	Religious Coping Questionnaire		α = .94

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Reference	Measure or item	Psychometrics of previous studies	Psychometrics of present study
Thomsen et al. (2004)	(1) "How often do you attend Sabbath-day religious services?" (2) "How often do you attend week-day religious services?" (3) "How important is religion in your life?"		α = .80
Tucker-Halpern et al. (2004)	Self-rated importance of religion		
Tully et al. (2006)	Frequency of attendance at religious ceremonies		
Van Den Bree et al. (2004)	(1) Importance of religion; (2) Frequency of prayer; (3) Attendance of services and youth groups		
Venning et al. (2007)	Systems of Belief Inventory		α = .96
Vesely et al. (2004)	Time spent on religious activities		
Viner et al. (2006)	Religious affiliation		
Walker et al. (2007)	(1) "Do you belong to a church, temple, mosque, or other religious organization?" (2) "How important would you say that religion and religious beliefs are to you?" (3) "During the past year, how often did you attend religious services?" (4) "What religion do you identify yourself with?"; Values on Religion Scale; Daily Spiritual Experiences Scale		α = .91; Religious Values Inventory, α = .91; Daily Spiritual Experiences Scale, α = .93
Wallace et al. (2003)	(1) "How important is religion in your life?" (2) "How often do you attend religious services?" (3) "What is your religious preference?"		r = .60 Between attendance and importance; r = .32 between attendance and affiliation; r = .41 between importance and affiliation
Wills et al. 2003a, b	Values on Religion Scale		α = .78–.81
Yi et al. (2009)	Spiritual Well-Being Scale		
Zaleski and Schiaffino (2000)	Religious Orientation Scale; Religious affiliation	Intrinsic, α = .88; Extrinsic, α = .61	
Zebrack and Chesler (2002)	Spiritual Well-Being Scale		Psychometric properties discussed more in depth in author's other article

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Table 2

Most frequently used measures/items examining religiosity/spirituality

Measure	Number of studies
Frequency of religious service attendance	43
Personal importance of religion	38
Religious affiliation	17
Frequency of prayer	12
Self-reported religiosity	10
Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)[*,†]	*8*
Frequency of youth group attendance	8
Spiritual Well-Being Scale[*]	*8*
Belief in God or a Higher Power	7
Belief in literal interpretation of religious texts	5
Frequency of other church group attendance	4
Religious Orientation Scale[*]	*4*
Religious Coping Questionnaire[*]	*4*
Systems of Belief Inventory[*]	*4*
Age-Universal I-E Scale	3
Frequency of deciding moral actions for religious reasons	3
Frequency of reading religious texts	3
Self-reported spirituality	3
COPE	2
Daily Spiritual Experience Scale	2
Experience of being “born again”	2
Frequency of discussion of spirituality and/or religion	2
Frequency of encouraging people to accept God as their savior	2
Frequency of seeking spiritual comfort	2
Personal Experience Inventory: Spiritual Isolation Scale	2
Religious Background and Behavior Questionnaire	2
Time spent in religious activities	2
Values on Religion Scale	2
Consistency of behaviors with expected religious behaviors	1
Doctrinal Orthodoxy Scale	1
Drinking-Related Internal/External Locus of Control Scale	1
Family religiosity	1
Frequency of asking God for help	1
Frequency of asking someone to pray for you	1
Frequency of Bible study attendance	1
Frequency of meeting with spiritual leaders	1
Frequency of observing religious holidays	1
Frequency of seeking help from a religious institution	1

Measure	Number of studies
Frequency of thanking God for events in life	1
Functional Assessment of Chronic Illness Therapy-Spirituality (FACIT-Sp)	1
Index of Core Spiritual Experiences (INSPIRIT)	1
Peer religiosity	1
Personal attachment to church	1
Religious Attitudes and Practices Survey	1
Religious Involvement Inventory	1
Religious Support Scale	1
Risk and Protective Factor Scales	1
Self-reported faith	1
Self-reported importance of attendance at religious services	1
Self-report involvement in religion	1
Self-reported strengthening of spiritual beliefs during times of stress	1
Spiritual Involvement and Beliefs Scale	1
Values on Religion Scale	1

[*] Five measures most often used and reviewed in depth in this article

[†] Italic font identifies measures; normal font identifies individual items

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