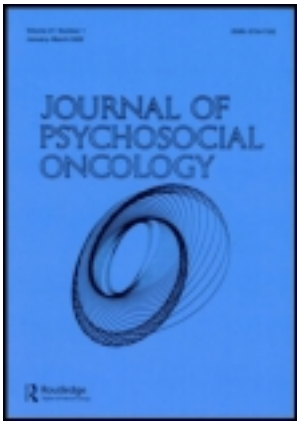

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Measuring Spirituality as a Universal Human Experience: Development of the Spiritual Attitude and Involvement List (SAIL)

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Many cancer patients experience spirituality as highly supportive while coping with their disease. Most research as well as most questionnaires in this field is religious orientated. The Spiritual Attitude and Involvement List was developed to enable research on spirituality among religious and nonreligious people. It consists of seven subscales that measure connectedness with oneself, with others and nature, and with the transcendent. Among a student, a healthy population, a healthy interested, a curative cancer, and a palliative cancer sample factorial, convergent and discriminant validity were demonstrated, as well as adequate internal consistency and test–retest reliability.

KEYWORDS spirituality, transcendence, religion, psychometric analysis, questionnaire, cancer, meaning of life

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INTRODUCTION

In Europe today, the number of people who attend church and believe in a personal God is dropping steadily (Lambert, 2004), whereas more and more people are looking for meaning and purpose in their lives and in spiritual experiences outside or across religious traditions (C. G. Brown, 2007; Heelas, 2005). Quantitative research has shown that spirituality is associated with mental health (Canada et al., 2006; Koenig, George, & Titus, 2004; Sawatzky, Ratner, & Chiu, 2005) and that this association is stronger among those people who face stressful life events, such as cancer (Smith, McCullough, & Poll, 2003). Quantitative research on the role of spirituality, however, is usually based on questionnaires that are restricted to religion (MacDonald, LeClair, Holland, Alter, & Friedman, 1995; Stanard, Sandhu, & Painter, 2000). This research is limited as it excludes the experiences of many people in secularized populations who are spiritual, but not religious. To investigate spirituality among these populations, an alternative spirituality questionnaire is needed, one that is valid among people from different religious and secular backgrounds and measures spirituality as a universal human experience.

Spirituality has been variously defined, but the definition and operationalization of spirituality seem to encompass two approaches. One is a religious, often theistic approach. The other is a nontheistic approach that is often based on secular, humanistic, and existential elements (McSherry & Cash, 2004; Moberg, 2002). In this study, we adopted the nontheistic approach, as it enables us to describe spiritual experiences of people from various religious or secular backgrounds. We define *spirituality* as "one's striving for and experience of connection with the essence of life," which encompasses three main dimensions: connectedness with oneself, connectedness with others and nature, and connectedness with the transcendent.

This definition concurs with literature on nontheistic spirituality. For example, the National Interfaith Coalition on Aging (1975) described *spiritual well-being* as the affirmation of life in a relationship with the self, community, environment, and God—a working definition that emerged from several meetings with representatives from various religions. In nursing research, also, *spirituality* is often defined in terms of connectedness. Reed (1992) defined *spirituality* on the basis of conceptual, empirical, and clinical nursing literature as

> the propensity to make meaning through a sense of relatedness to dimensions that transcend the self in such a way that empowers and does not devalue the individual. This relatedness may be experienced intrapersonally (as a connectedness within oneself), interpersonally (in the context of others and the natural environment) and transpersonally (referring to a sense of relatedness to the unseen, God, or power greater than the self and ordinary source). (p. 350)

Finally, several reviews assert that connectedness is a predominant theme in definitions and operationalizations of *spirituality* (Chiu, Emblen, Van Hofwegen, Sawatzky, & Meyerhoff, 2004; Cook, 2004; Dyson, Cobb, & Forman, 1997). Connectedness with oneself is expressed by such aspects as authenticity, inner harmony/inner peace, consciousness, self-knowledge, and experiencing meaning in life (Chiu et al., 2004; Elkins, Hedstrom, Hughes, Leaf, & Saunders, 1988; Howden, 1992; Hungelmann, Kenkel-Rossi, Klassen, & Stollenwerk, 1985; Mahoney & Graci, 1999; Young-Eisendrath & Miller, 2000). Connectedness with others and with nature is related to compassion, caring, gratitude, and wonder. Connectedness with the transcendent includes connectedness with something or someone beyond the human level, such as the universe, transcendent reality, a higher power, or God. Aspects related to the latter dimension are awe, sacredness, adoration of the transcendent, and transcendental experiences. Although some reviews have mentioned other main themes besides connectedness, such as meaning in life, transcendence, power/energy and sacredness (Chiu et al., 2004; Hill et al., 2000; Tanyi, 2002), these themes can be considered part of one of the three domains of connectedness.

There are researchers who have developed spirituality questionnaires that aim to measure spirituality as a universal experience. However, most do not achieve their objective. First, these questionnaires contain many items on religiousness that are not placed in a separate subscale, such as "I feel God's love for me through others" (Daily Spiritual Experience Scale [DSE]; Underwood & Teresi, 2002) and "I practise some form of prayer" (Expressions of Spirituality Inventory Revised [ESI-R]; MacDonald, 2000). These items assume religiousness and are therefore not answerable by nonreligious people. Second, though some of these spirituality questionnaires do not contain items about God, they inquire about another kind of belief, such as "The universe is not yet done but is unfolding in a meaningful way" and "Humans are sometimes 'called' to fulfill a certain spiritual destiny" (Spiritual Orientation Inventory [SOI]; Elkins et al., 1988).

Questionnaires that do measure spirituality as a universal experience appear not to be without limitations. Firstly, the psychometric evaluation of most spirituality questionnaires is limited or unsatisfactory (George, Larson, Koenig, & McCullough, 2000; Jager Meezenbroek et al., 2010). Many questionnaires are not factor analyzed or the factor solutions appear to be inconsistent, and information about convergent validity is often lacking. Second, scales that are sometimes described as "spiritual well-being" scales contain positivism and well-being items. To avoid tautology, it is not advisable to use these scales when investigating a relationship with well-being. Examples of such scales are the Spiritual Well-Being Scale of the Functional Assessment of Chronic Illness Therapy (FACIT-Sp-12; Brady, Peterman, Fitchett, Mo, & Cella, 1999) and the Spiritual Well-Being Scale (SWB; Ellison, 1983). Third, the formulation of some items are inappropriate. Items should be

comprehensible, have a consistent meaning, and should be answerable by all respondents (Fowler, 1995). Examples of unsuitable formulations are "I have the ability to rise above or beyond a physical or psychological condition" (Spirituality Assessment Scale [SAS]; Howden, 1992) and "There is an order to the universe that transcends human thinking" (Spiritual Transcendence Scale [STS]; Piedmont, 1999). In these items, metaphors or abstract concepts are used, making them difficult to answer and open to various interpretations. Fourth, a multidimensional questionnaire is preferred, as spirituality is a multidimensional construct (Hill et al., 2000; Moberg, 2002). Unravelling spirituality into specific facets is essential for making precise statements about its nature, for example, statements about which facets of spirituality are most closely related to well-being. In fact, we could not find one multidimensional spirituality questionnaire that satisfied all of our criteria (Jager Meezenbroek et al., 2010). After considering these limitations, we decided to develop a new questionnaire, titled the Spiritual Attitude and Involvement List (SAIL).

This article describes the development and validation of the SAIL questionnaire, which evolved in four consecutive phases. In the first phase, facets of spirituality were defined, and items were formulated on the basis of these definitions and then tested for comprehensibility and suitability. In the second phase, our questionnaire was adjusted on the basis of item and factor analyses conducted on a sample of students. In the third phase, the adjusted version was tested on two healthy adult samples: a population sample and a sample of adults with an interest in spirituality. The questionnaire was adjusted so that its factor structure was equal for both samples to guarantee that the questionnaire would be suitable for use among people whose spiritual background widely differs. In the fourth phase, we tested the factor structure of the last SAIL version for confirmation on two new samples: a sample of curatively treated cancer patients and a sample of palliative cancer patients. These two new study groups were chosen because it is interesting and important to study the role of spirituality among people with a serious disease, such as cancer, on account of its existentially threatening character. In this last phase, we also determined the internal consistency, test–retest reliability and convergent and discriminant validity of the final SAIL in all five samples.

METHOD

Participants

The student sample comprised students from the Faculty of Social Sciences at the University of Utrecht in the Netherlands. Baseline characteristics of the five samples are mentioned in Table 1. Three thousand students were approached by e-mail and invited to complete the SAIL and several additional questions online, resulting in a response rate of 32%.

TABLE 1 Sample Characteristics

Samples	Range	Mean/Frequency	*SD*
Students ($N = 950$)			
age (years)	17–49	22	4
gender (% male)		14	
education level (1–7)	5–7	[a]	[a]
Healthy population ($n = 118$)			
age (years)	39–83	54	11.0
gender (% male)		49	
education level (1–7)	1–7	5.1	2.0
Healthy interested ($n = 348$)			
age (years)	25–85	42	11
gender (% male)		20	
education level (1–7)	1–7	5.6	1.2
Curative cancer ($n = 153$)			
age (years)	25–84	57	12
gender (% male)		12	
education level (1–7)	1–7	3.7	1.9
time since diagnosis (year)	0.2–19.6	2.2	3.2
type of cancer (%; four most prevalent types)			
breast		77	
colorectal		11	
lymphoma		5	
prostate		2	
Palliative Cancer ($n = 66$)			
age (years)	32–86	64	12
gender (% male)		45	
education level (1–7)	1–7	3.8	2.0
time since diagnosis (year)	0.2–15.7	3.2	3.5
type of cancer (%; four most prevalent types)			
breast		25	
colorectal		25	
ovary		9	
lung		9	

[a]All students had completed a preuniversity education (level 5) or higher. There was no data available about which students had attained a bachelor's degree (level 6) or a master's degree (level 7).

Participants of the healthy population sample were recruited in 10 randomly-chosen areas in the city of Utrecht by ringing the doorbell at every fifth house in each of the selected neighborhoods. Those inhabitants who were willing to participate (no more than one per household) and who satisfied the inclusion criteria (older than age 40 years, Dutch speaking, and without a chronic and/or life-threatening disease) were asked to complete our questionnaire either online or on paper. To increase the comparability of the healthy population sample and the cancer patients samples we used the age criterion, as cancer patients are older than the general adult population. A total number of 594 households were approached, and 408 people met the inclusion criteria, resulting in a response rate of 29%.

The healthy interested sample consisted of adults interested in psychology, philosophy, or spirituality, who were recruited through newspaper and

online advertisements, and newsletters, and completed the questionnaire online. Inclusion criteria were age 18 years or older, Dutch speaking, with no serious diseases.

The two groups of cancer patients who met the inclusion criteria (age 18 years or older, Dutch speaking, and having been diagnosed with cancer more than 2 months before assessment) were recruited by nurses or physicians in seven hospitals located in or around the city of Utrecht. A total of 415 patients eligible for inclusion were approached, and 53% responded by completing the questionnaire on paper. The physician noted whether the patient's treatment was intended to cure or to relieve symptoms (curative vs. palliative treatment). This division was made because both groups of cancer patients differ widely in terms of their perspective on life and the impact of their disease, and these factors could change their perception of spirituality. During the month before commencement of this study, 58% of the curative cancer patients had been treated, whereas as many as 85% of the palliative cancer patients had been treated.

Data Screening

Missing values were substituted using the following formula: "average of the nonmissing responses to the item" multiplied by the "sum of the responses to the other items of the scale by the person with missing values" divided by the "sum of average responses to the other items" (Huisman, 1999). Missing values were only substituted if a minimum of 75% of a scale had been completed. Given that the factor structure of the SAIL was unknown at the start of this research, missing values were substituted by the sample mean calculated for the relevant item. Multivariate outliers were detected and, if appropriate, removed using Mahalanobis distances (Mahalanobis, 1936).

Development of the SAIL Questionnaire by Item and Factor Analyses in the First Three Phases

In Development Phase 1, we consulted 30 experts (psychology researchers, psychotherapists, theologians, pastoral workers, and medical doctors), asking them to define what they viewed as aspects of spirituality. On the basis of their responses and literature, we then formulated 14 aspects of spirituality (see Figure 1). Each of these aspects are also mentioned in reviews on spirituality (Chiu et al., 2004; Elkins et al., 1988; Howden, 1992; Hungelmann et al., 1985; Mahoney & Graci, 1999; Young-Eisendrath & Miller, 2000). Each aspect was described and presented to the 30 experts, who agreed on each of the 14 aspects and their descriptions. Next, the researchers formulated items for each aspect. To formulate appropriate items, the following three criteria established by Fowler (1995) were used: (1) items should

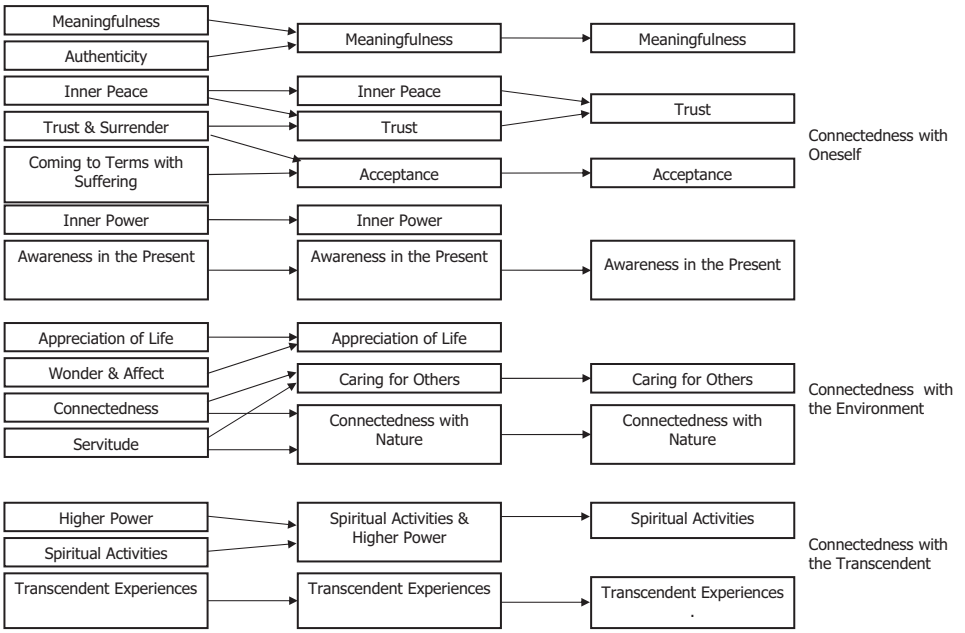

FIGURE 1 Subscale changes from first, to second, to final SAIL. On the basis of factor analyses, the SAIL evolved from 14 to 11 and consequently to eight subscales. Some of the originally 14 subscales were merged into one new scales (e.g., Meaningfulness and Authenticity into the new scale Meaningfulness), whereas other scales disappeared in the process of psychometric evaluation (e.g., Inner Power). The final version consists of seven subscales, as convergent validity could not be demonstrated for the subscale Awareness in the Present.

inquire about firsthand experiences and not, for example, about hypothetical behaviour or causality; (2) items should include a single question, they should, for example, not include hidden contingencies; and (3) items should be formulated such that they have a consistent meaning. On this basis, words that are generally understandable and have the same meaning for respondents have been used. A few items were derived from existing subscales. For the subscale Awareness in the Present, items were selected from the Mindful Attention Awareness Scale (K. W. Brown & Ryan, 2003). For the subscale Transcendental Experiences, questions were taken from the Experiential/Phenomenological Dimension of the Expressions of Spirituality Inventory (MacDonald, 2000).

Following this, the questionnaire was presented to a new group of experts ($n = 6$) and laypersons ($n = 8$), who verified whether the items adequately represented the 14 aspects, and then evaluated their suitability, comprehensibility, ambiguity, and possible redundancy. In addition, six other laypersons were interviewed to test whether they interpreted the items as they were intended by the researchers. On the basis of their comments, the

SAIL was adjusted, resulting in the first version of the SAIL, which consists of 106 items and 14 subscales.

For most of the items, the SAIL uses a Likert-type scale ranging from 1 (*not at all*) to 6 (*to a very high degree*). For the subscales Transcendent Experiences and Spiritual Activities from the first version of the SAIL a Likert-type scale ranging from 1 (*never*) to 6 (*very often*) is used. The items in the subscale Awareness in the Present are reverse scored.

In Development Phase 2, the SAIL was adjusted on the basis of item analyses and explorative factor analysis (EFA) of data taken from the student sample. First, items were removed if they showed limited variance or were redundant. Items were judged to have limited variance if more than 80% of the respondents answered in two adjacent answering categories. If items were closely related (Pearson correlation coefficient > 0.85), one of the items provided sufficient information and the others were removed. Secondly, an EFA was conducted. We used a principal components analysis (PCA) with oblique rotation, because the factors (spiritual aspects) were expected to be related. To determine the number of factors the criterion of eigenvalues greater than 1 is unsuitable as the number of variables exceeds 40 (Tabachnick & Fidell, 2001). As an indication of the number of factors we investigated first whether the scree plot revealed a clear twist. Next, we compared several factor solutions and chose the one that corresponded best with the initial theoretical subdivision into 14 subdimensions and that had a simple structure (Thurstone, 1947). Finally, items were removed if their factor loading was below .40.

In Phase 3, adjustments were made on the basis of psychometric analyses on data collected among the healthy population sample and the healthy interested sample. Again, redundant items or items with limited variance were removed. Next, adjustments were made on the basis of factor analyses as described below.

The purpose of this phase was to develop a questionnaire with a factor structure that is consistent among people from various spiritual backgrounds, in this case concentrating on the two samples of healthy adults. This process runs in three steps. First a good fitting model for the two samples together was developed using EFA. Second, the fit of the factor model was tested on the combined data, using confirmatory factor analysis (CFA), which is a necessary intermediate stage for the last step. Third, a multigroup CFA was used, which is a procedure for testing factor solution invariance across several samples. The two-group model in which factor loadings were constrained to be equal across groups was compared to a baseline two-group model in which none of the parameters were constrained. The models were compared using chi-square statistics. A nonsignificant chi-square difference between the models indicates invariance in the pattern of factor loadings across groups.

CFAs were computed using AMOS-7 with maximum likelihood estimation. The fit of all the CFA models was evaluated using the fit indices root mean square error of approximation (RMSEA), where RMSEA values less than .06 indicate a good fit (Byrne, 1998), and the Comparative Fit Index (CFI). Some authors consider that a good fit is indicated by CFI values that are greater than .90 (Byrne, 1998). Other authors use the criterion of .95 (Hu & Bentler, 1999) but indicate that it is harder for smaller samples (i.e., $N \leq 250$) to reach this value. Because our samples were small, we applied the .90 criterion. If the scores showed insufficient fit, the model was adjusted using the multivariate Lagrange Multiplier test (LM). This test identifies the parameters that should be added to the model to improve the fit. Two types of adjustments were made. First, if the LM test suggested that measurement errors within a factor were correlated, covariance between these errors was added (Kline, 2005, pp. 168–169). Second, if the LM test suggested that items loaded on more than one factor, the item with the lowest factor loading was removed.

Overview Psychometric Tests Phase 4

The final version of the questionnaire developed in the first three phases was psychometrically tested in Phase 4. Table 2 presents all psychometric tests and corresponding criteria applied in each of the samples. Factor validity was established in the previous phases. In Phase 4, we used two-group CFA models to test whether the factor structure of the SAIL could be replicated among two cancer patient samples, and whether the factor structure across these two samples was equal. Internal consistency and test–retest reliability has been tested to determine reliability; test–retest data was not available for the students sample. A multitrait multi-method analysis was used to determine convergent and discriminant validity using two methods (questionnaire and interview) and two traits (spirituality and locus of control). Convergent validity has also been ascertained by comparing scores to the SAIL subscales with the SAIL total score, with other well-known, validated spirituality and religiosity scales, and with answers to the questions "Do you consider yourself spiritual/religious," Discriminant validity has also been established by determining the relationship with locus of control (LOC). At last, we have determined whether answers to the SAIL were susceptible to social desirable responding.

Questionnaires

Spirituality. In addition to the SAIL questionnaire, we used two other measures of spirituality, namely the question "Do you consider yourself

TABLE 2 Methods Applied for Testing Validity and Reliability

Validation Type	Method	Criteria	Applied in
Factorial validity	Confirmative Factor Analysis (CFA)	RMSEA $\leq$ .06, CFI $\geq$. 90	Sample 1
	Multigroup CFA	RMSEA $\leq$. 06, CFI $\geq$ .90, nonsignificant χ^2 difference between model with equal factor loadings and baseline model	Samples 2–5
Reliability	Internal consistency	A $\geq$. 70	Samples 1–5
	Test–retest (interval of 1 month)	$R \geq .70$	Samples 2–5
Convergent and discriminant validity	Multitrait multimethod	$r_{\text{mono-trait, hetero-method}} \geq .40$ $r_{\text{mono-trait, hetero-method}} \geq r_{\text{hetero-trait, mono-method}}$	Samples 2–5
Convergent validity	Association with the		
	corrected SAIL-total	$r \geq .30$	Samples 1—5
	a spirituality	$r \geq .30$	Samples 1–5
	inventory (the FACIT)	$r \geq .30$	Samples 1–5
	"being spiritual"	$r \geq .30$, for 'religious' scales	Samples 1–5
	a religiosity	$r \geq .30$, for 'religious' scales	Samples 1–5
	inventory (the ROS)		
	"being religious"		
Discriminant validity	Association with internal locus of control (the IE-int)	$r \leq 30$	Samples 2–5
Social desirability	Association with social desirability (the IM scale of the BIDR)	$r \leq .30$	Samples 1, 4, & 5

Sample 1 = Student sample; sample 2 = Healthy population sample; sample 3 = Healthy interested sample; sample 4 = Curative cancer sample; sample 5 = Palliative cancer sample.
RMSEA = root mean square error of approximation; CFI = comparative fit index; SAIL = Spiritual Attitude and Involvement List; FACIT = Functional Assessment of Chronic Illness Therapy; ROS = Religious Orientation Scale; IE-int = Internal Locus of Control Scale; IM = Impression Management; BIDR = Balanced Inventory of Desirable Responding.

spiritual?" (to be answered on a 5-point scale ranging from *not at all* to *certainly*) and the Spiritual Well-Being subscale of the Functional Assessment of Chronic Illness Therapy (FACIT-Sp-12; Brady et al., 1999; Dutch translation sourced from www.facit.org). The FACIT-Sp is frequently used, is not restricted to a particular religion, focuses on experiences and attitudes, and is valid and reliable (Brady et al., 1999; Peterman, Fitchett, Brady, Hernandez, & Cella, 2002). The FACIT-Sp Scale includes well-being items, which presents a problem when studying the relationship between spirituality and well-being, something we did not do in this study. In the studies among the student sample and healthy sample, two out of the 12 items from the FACIT-Sp were removed, because they were suitable only for people with a

chronic illness. The questionnaire consists of two subscales: Meaning/Peace and Faith. We used the total scale of the FACIT-Sp because factor analyses showed considerable overlap between the two subscales (Noguchi et al., 2004; Peterman et al., 2002). The FACIT-Sp-12 demonstrated good internal consistency across the five samples in this study (α = .79–.85).

Religiosity. We measured religiosity with the question "Do you consider yourself religious?" (5-point scale ranging from *not at all* to *certainly*) and a Dutch translation of the nine-item Intrinsic subscale of the Religious Orientation Scale (ROS; Allport & Ross, 1967), which is one of the most frequently used religiosity scales. In our study, the ROS demonstrated excellent reliability (α = .88–.96). A relationship with religiosity was expected for the SAIL subscales that represent the dimension connectedness with the transcendent.

Internal Locus of Control. To determine discriminant validity, we assessed the relationship between the SAIL and internal LOC. Spiritual people have a tendency to choose their own path in life, but also to surrender to the unknown and to what life has in store for them. Given these tendencies, no close association with internal LOC was expected. We used the 5-item Internal Locus of Control Scale (IE-int) from the Dutch IE-18 LOC questionnaire (IE-18; Den Hartog, 1992). This measure was based on the widely-used Internal-External Control Scale of Rotter (1966). Reliability was fair for all samples (α = .68–.72), except for the cancer patients (α = .56 for both samples of cancer patients).

Social Desirability. Socially-desirable responding was determined by associating the SAIL with the Impression Management (IM) subscale from the Balanced Inventory of Desirable Responding (BIDR; Paulhus, Shaver, & Wrightsman, 1991; Dutch translation by I. Nyklicek, personal communication, October 28, 2004). The IM subscale is a widely used and valid instrument for assessing socially-desirable responding (Paulhus et al., 1991; Stober, Dette, & Musch, 2002). Two of the 20 items were removed because they were not suitable for all respondents. Reliability appeared to be reasonable in this study (α = .67–.79).

Test–Retest Reliability

All participants from the four samples (i.e., the two healthy adult samples and the two cancer samples) were approached 3 weeks after they had completed the SAIL and were asked to fill in the questionnaire a second time. Participants that completed the first set of questionnaires on Internet were approached by e-mail, others by post. After 2 weeks had passed, a reminder was sent. Those participants who were interviewed for the multitrait multimethod test (see later) were excluded from this retest. Mean test–retest

intervals were: healthy population 4.3 weeks ($SD = 0.6$), healthy interested 3.4 weeks ($SD = 0.8$), curative cancer 4.1 weeks ($SD = 1.5$), and palliative cancer 3.9 weeks ($SD = 1.0$). Response rates were healthy population 55%, healthy interested 64%, curative cancer 96%, and palliative cancer 87%.

Validity

Convergent validity was tested by determining (1) the interrelationship of SAIL subscales and (2) the relationship between the SAIL subscales with the single item about considering oneself spiritual and the FACIT. In addition, the SAIL subscales belonging to the transcendent dimension were expected to be associated with the single item about considering oneself religious and with the ROS. Discriminant validity was tested by determining the relationship between the SAIL and IE-int and between the SAIL and the IM scale of the BIDR (socially-desirable responding).

Multitrait Multimethod Test

The multitrait multimethod test assesses convergent and discriminant validity—in this study by comparing questionnaire with interview outcome (multimethod), with respect to spirituality and LOC (multitrait). To this end we conducted semistructured interviews among randomly selected respondents from the healthy population sample ($n = 23$), the curative cancer sample ($n = 14$), and the palliative cancer sample ($n = 11$). The data from both samples of cancer patients were combined to obtain a sufficiently large sample size. Interviews were first rehearsed and evaluated in a pilot study ($n = 8$). Participants were interviewed about each aspect (subscale) of the SAIL, such as meaningfulness and connectedness with nature, and were asked to give concrete examples of experiences and behaviors referring to that aspect. Next, they rated how important that aspect was for him or her on a 6-point Likert-type scale, for example, "To which extent do you feel connected with nature?" This score was used in the validity analysis and related to the mean scores of the corresponding SAIL subscale. The same procedure was followed with respect to internal LOC.

The interviewer and a second rater, which judged the recorded interview, also rated his or her view on how important a particular aspect was for the respondent. To determine interrater reliability average measures intraclass correlation coefficient with a two-way mixed-effect model was used. The mean duration of the interviews was 97 minutes. The respondents from the healthy population sample were interviewed on average 3.7 weeks ($SD = 0.9$) after they had completed the SAIL, the respondents of the cancer sample 4.4 weeks ($SD = 1.4$).

Convergent and discriminant validity is demonstrated if the correlation between a particular spirituality aspect assessed with the questionnaire and the interview is higher than the correlation between that particular spirituality aspect and internal LOC, both assessed either by questionnaire or by interview (hetero-trait mono-method correlation coefficient; Campbell & Fiske, 1959). Furthermore, the mono-trait hetero-method coefficient must be sufficiently high for each spiritual aspect ($r \geq .40$; according to Campbell and Fiske, 1959, a correlation of .40 is impressive).

Significance level was set at $\alpha = .05$, two-sided. Only significant correlation coefficients will be reported.

RESULTS

Spiritual Affiliations

The participants in the various samples differed strongly in their religious and spiritual affiliation. Twenty-nine percent of the students considered themselves part of a religious or spiritual community, compared to 73% of the palliative cancer patients (see Table 3). People considered themselves more spiritual than religious in all groups, except the palliative cancer group. As was to be expected, the healthy interested sample considered themselves most spiritual: 78% considered themselves "somewhat" or "certainly" a spiritual person. In the other samples, 39% to 55% considered themselves spiritual. Spirituality and religiousness overlapped for some participants (19% 38% considered themselves religious and spiritual), others were spiritual without being religious (11%–36%), or were religious without being spiritual (1%–17%).

Item and Factor Analyses

In Phase 2, the first version of the SAIL was adjusted on the basis of item analysis and explorative factor analysis (EFA). The scree plot did not reveal a clear twist and was therefore unsuitable to determine the number of factors. We compared several factor solutions and chose the 14-factor solution as it matched best with the initial theoretical subdivision and had a simple structure. Three of the 14 factors consisted of only one or two items, and the content of these factors was already represented in the other factors. Therefore, these three factors were removed. The resulting 11 factors largely corresponded to the initial theoretical subdivision (see Figure 1). The factors Acceptance and Awareness in the Present comprise each of four items. As Cronbrach's alpha of these subscales was only around .70, two new items were added to these two subscales. After these adjustments, the SAIL consisted of 11 subscales and 85 items.

TABLE 3 Spiritual and Religious Background

	Religious Community				Considering Oneself Spiritual or Religious and the Combination Between the Two					
Samples	None %	Catholic %	Protestant %	Other %	$Spir^+$ %	Rel^+ %	$Spir^+$ Rel^+ %	$Spir^+$ Rel^- %	$Spir^-$ Rel^+ %	$Spir^-$ Rel^- %
Students ($N = 950$)	71	9	19	1	39	33	19	16	10	34
Healthy population ($n = 118$)	53	17	19	11	50	35	27	20	8	31
Healthy Interested ($n = 348$)	60	12	12	16	78	38	34	36	1	11
Curative cancer ($n = 153$)	35	30	30	5	55	50	38	15	9	23
Palliative cancer ($n = 66$)	27	30	30	13	49	62	38	11	17	18

Spir = Spiritual; Rel = Religious; + = *somewhat* or *certainly*; − = *not at all* or *not really*.
The questions "Do you consider yourself spiritual?" and " Do you consider yourself religious?" were answered on a 5-point scale ranging from *not at all* to *certainly*. Spir+ and Rel+ may add up to more than 100%, because people may consider themselves spiritual and religious. Combinations do not add up to 100%, because the middle answering category is not included.

EFA was also applied as the first step in Phase 3. The scree plot was again indecisive about the number of factors. The best solution consisted of eight factors because it yielded the simplest structure. Confirmatory factor analysis (CFA) was applied aimed at developing a fitting one-group model (Step 2) and next a two-group model (Step 3). As the fit scores demonstrated that the one-group model's fit was insufficient, the model was adjusted using the multivariate Lagrange Multiplier test (LM). When testing the two-group model, it appeared that the model needed to be adjusted again to obtain a similar factor structure for both groups. Items were removed using the LM test until the two-groups model fitted. This procedure resulted in a questionnaire with eight subscales represented by 30 items (see Table 4). Table 5A presents the final fit of the model.

Overview of Phases 1–3. The SAIL evolved from 14 subscales and 106 items in the first phase, to 11 subscales and 85 items in the second phase and finally to eight subscales and 30 items in the third phase. Figure 1 shows the relationship between the subscales in the three versions of the SAIL and how the subscales related to the three domains of Connectedness.

In Phase 4, the factor structure developed among the two healthy adults samples was confirmed in the two cancer samples. The RMSEA was smaller than .06 (see Table 5A). Furthermore, the nonsignificant chi-square difference between the multigroup models indicate invariance in the pattern of factor loadings across the two samples of cancer patients. The CFI, however, was slightly beneath the .90. Therefore, the replication of the factor structure was not completely successful. For reasons of comparability, the eight-subscale version of the SAIL was also tested with CFA in the student sample, which showed that the model yielded a good fit to the data.

Reliability

Internal consistency was determined nine times for each subscale, because the SAIL was assessed twice to determine test–retest reliability in four of the five samples. Mean Cronbach's alphas across the nine measurements for the eight subscales ranged from .73 to .86.

Test–retest reliability over a month appeared to be sufficient in the two samples of healthy adults ($n_{\text{healthy population}} = 52$, $n_{\text{healthy interested}} = 222$) and the curative cancer sample ($n = 134$, $r = .68–.94$). However, in the palliative cancer group correlation coefficients were low for five of the eight SAIL subscales ($n = 48$, $r = .49–.65$). The relatively low stability of the SAIL in this group probably reflects changes in the lives of the respondents, rather than the SAIL's unreliability. Seven respondents received unfavorable news regarding their disease during the period between the two tests. Test–retest reliability increased once these cases were deleted from the analysis ($r_{\text{Palliative Cancer}} = .61–.90$).

TABLE 4 Subscales and Spiritual Attitude and Involvement List (SAIL) Items

Meaningfulness	I know what my position is in life
	I experience the things I do as meaningful
	My life has meaning and purpose
Trust	I approach the world with trust
	In difficult times, I maintain my inner peace
	Whatever happens, I am able to cope with life
	I try to take life as it comes
Acceptance	I accept that I am not in full control of the course of my life
	I am aware that each life has its own tragedy
	I accept that I am not able to influence everything
	I accept that life will inevitably sometimes bring me pain
Awareness in the Present	I find it difficult to stay focused on what's happening in the present
	When I am busy doing something, I find my thoughts wandering off
	It seems I am "running on automatic" without much awareness of what I'm doing
	I find myself doing things without paying attention
Caring for Others	It is important to me that I can do things for others
	I am receptive to other people's suffering
	I try to make a meaningful contribution to society
	I want to mean something to others
Connectedness with Nature	The beauty of nature moves me
	When I am in nature, I feel a strong sense of connection
Transcendent Experiences	I have had experiences during which the nature of reality became apparent to me
	I have had experiences in which I seemed to merge with a power or force greater than myself
	I have had experiences in which all things seemed to be part of a greater whole
	I have had experiences where everything seemed perfect
	I have had experiences where I seemed to rise above myself
Spiritual Activities	There is a God or higher power in my life that gives me guidance
	I talk about spiritual themes with others (themes such as the meaning in life, death or religion)
	I meditate or pray, or take time in other ways to find inner peace
	I attend sessions, workshops, etc. that are focused on spirituality or religion

For most items, a Likert-type scale ranging from 1 (*not at all*) to 6 (*to a very high degree*) is used. For the subscale Transcendent Experiences and the last three items of the subscale Spiritual Activities, a Likert-type scale ranging from 1 (*never*) to 6 (*very often*) is used. The items in the subscale Awareness in the Present are reverse scored. The final version of the SAIL consists of seven subscales, as convergent validity could not be demonstrated for the subscale Awareness in the Present.

Subscale Scores

The mean values of the eight SAIL subscales are presented in Table 6. Most spiritual aspects were experienced between "a reasonable degree" (score 4) and "a high degree" (score 5). The mean values for Transcendent

TABLE 5 Factorial Validity of Spiritual Attitude and Involvement List (SAIL): (A) 8-Factor Solution and (B) 7-Factor Solution, that is, Without the Subscale Awareness in the Present

Samples	*df*	χ^2	Δdf	$\Delta\chi^2$	RMSEA	CFI
		A. 8-Factor Solution				
Students ($N = 950$)	343	1190.1*	—	—	.051	.91
Healthy adults ($n = 118$ and $n = 348$)						
1. multigroup model, unrestricted	742	1256.1*	—		.039	.91
2. multigroup model, equal factor loadings	764	1284.5*	22	-28.4^{ns}	.038	.91
Cancer patients ($n = 153$ and $n = 66$)						
1. multigroup model, unrestricted	742	1084.4*		—	.046	.88
2. multigroup model, equal factor loadings	764	1105.3*	−22	20.9^{ns}	.045	.88
		B. 7-Factor Solution				
Students ($N = 950$)	248	937.6*	—	—	.054	.92
Healthy adults & cancer patients ($n = 118, 348, 153, \& 66$)						
1. multigroup model, unrestricted	1088	1783.8*	—	-75^{ns}	.031	.91
2. multigroup model, equal factor loadings	1145	1858.8*	57		.030	.91

RMSEA = root mean square error of approximation; CFI = comparative fit index; ns = not significant.
*$p \leq 0.001$.

Experiences and Spiritual Activities were lower as these aspects were experienced between "seldom" (score 2) and "sometimes" (score 3).

Relationship with Demographic Variables

To assess the relationship between spirituality and demographic variables, data from all samples were combined.

TABLE 6 Mean Values of Spiritual Attitude and Involvement List Subscales

SAIL Subscale	Students *M* (*SD*)	Healthy Population *M* (*SD*)	Healthy Interested *M* (*SD*)	Curative Cancer *M* (*SD*)	Palliative Cancer *M* (*SD*)
Meaningfulness	3.7 (0.8)	3.9 (0.8)	4.0 (0.8)	4.2 (0.8)	4.2 (0.7)
Trust	3.7 (0.8)	3.9 (0.7)	4.2 (0.7)	4.2 (0.7)	4.1 (0.5)
Acceptance	4.0 (0.7)	4.3 (0.8)	4.4 (0.7)	4.3 (0.8)	4.3 (0.7)
Awareness in the Present	4.4 (0.7)	4.3 (0.7)	4.3 (0.8)	4.4 (0.8)	4.4 (0.7)
Caring for Others	4.4 (0.7)	4.2 (0.7)	4.6 (0.7)	4.5 (0.7)	4.3 (0.6)
Connectedness with Nature	3.8 (1.1)	4.5 (1.0)	4.8 (0.9)	4.6 (1.0)	4.7 (0.9)
Transcendent Experiences	2.3 (0.7)	2.3 (0.9)	3.2 (1.0)	2.5 (1.0)	2.3 (0.8)
Spiritual Activities	2.6 (1.2)	2.4 (1.1)	3.4 (1.1)	2.9 (1.2)	2.9 (1.1)

Answer categories range from 1 (*not at all*) to 6 (*to a very high degree*), or 1 (*never*) to 6 (*very often*).

Age was positively associated with all SAIL subscales ($r = .12$–$.34$), except for Awareness in the Present and Caring for Others. Higher age was related to more spiritual involvement. Females expressed more Caring for Others than males ($r = .14$) and less Trust and Acceptance ($r = -.14$ and $-.08$, respectively). People with a higher level of education experienced more Acceptance, more Transcendent Experiences, and more Spiritual Activities ($r = .10$, .11, and .09, respectively; the sample of students was not included, because their exact education level was unknown). The SAIL scores were also related to spiritual background. Members of a religious or spiritual community scored higher on all subscales ($r = .09$–$.41$), except on Trust and Awareness in the Present.

Convergent and Discriminant Validity

Table 7 shows the convergent and discriminant validity of the eight SAIL subscales across the samples.

Multitrait Multimethod. The interviews had an acceptable to good interrater reliability (ICC = .64–.97). In the healthy population sample, the association between questionnaire and interview scores appeared unsatisfactorily low for the subscales Acceptance and Transcendent Experiences. After evaluating the interview questions, it was concluded that the questions about these aspects could be improved. After adjustments were made for the interviews with cancer patients, acceptable associations for all subscales were found, thus demonstrating convergent validity. Discriminant validity of the SAIL was also demonstrated: The mono-trait hetero-method correlation coefficients were higher than hetero-trait mono-method correlation coefficients, except for Acceptance and Transcendent Experiences in the healthy population sample. In summary, each spiritual aspect correlated more with itself when measured with the two different methods (the questionnaire and the interview; mean $r = .55$), than with internal LOC when measured with the same method (mean $| r | = .09$).

Intercorrelations of the SAIL Subscales. Each SAIL aspect was sufficiently associated with the corrected SAIL total score (sum of the score on the other SAIL aspects), except the subscale Awareness in the Present. Among the palliative cancer patients, also Transcendental Experiences appeared to be unrelated to the other SAIL subscales.

Relationship with Spirituality. Six of the eight subscales were sufficiently associated with the FACIT-Sp. Awareness in the Present and Connectedness with Nature were insufficiently associated with the FACIT-Sp. Once again, the palliative cancer group showed an exception for Transcendental Experiences; no relationship was found with the FACIT-Sp for this group. Remarkably, only three subscales of the SAIL were associated with the

TABLE 7 Convergent and Discriminant Validity of the Spiritual Attitude and Involvement List

Criterion	Multitrait multimethod $r \geq .40$ correlation coefficients healthy group	cancer group	SAIL $r \geq 0.30$ M (range)	FACIT $r \geq 0.30$ M (range)	spiritual person? $r \geq 0.30$ M (range)	LOC $r \leq 0.30$ M (range)	BIDR $r \leq 0.30$ M (range)
Meaningfulness	.43	.57	.60 (.54–.74)	.63 (.44–.75)	.20 (.12–.24)[a]	.19 (.06–.31 [a])	.19 (.13–.24)
Trust	.60	.54	.46 (.36–.55)	.53 (.46–.65)	.11 (−.04–.28)[a]	.26 (.10–.37 [a])	.13 (.06–.18)
Acceptance	.22[a]	.59	.44 (.30–.57)	.39 (.27–.52)	.21 (.13–.27)[a]	.00 (−.15–.22)	.07 (.06–.09)
Awareness in the Present	.63	.41	.15 (.01–.20)[a]	.24[a] (.19[a]–.32)	.03 (−.08–.12)[a]	.13 (.07–.19)	.16 (.13–.20)
Caring for Others	.41	.39	.43 (.32–.58)	.38 (.27–.56)	.23[a] (.15[a]−.33)	.01 (−.06–.14)	.26 (.19–.37[a])
Connectedness with Nature	.66	.88	.38 (.29–.53)	.25[a] (.14[a]−.39)[a]	.33 (.29–.37)	.04 (−.01–.08)	.15 (.11–.20)
Transcendent Experiences	.27[a]	.64	.46 (.17[a]−.60)	.38 (.07[a]−.49)[a]	.51 (.41–.57)	.10 (.01–.23)	−.04 (−.17–.09)
Spiritual Activities	.81	.74	.48 (.40–.54)	.55 (.47–.59)	.60 (.46–.70)	−.08 (−.26–.02)	.26 (.23–.29)

FACIT = Functional Assessment of Chronic Illness Therapy; LOC = locus of control; BIDR = Balanced Inventory of Desirable Responding.
[a]Scores indicate a substantial deviation from the validation criterion. For the multitrait multimethod test, correlations between each SAIL subscale score and the corresponding interview subscale score are presented.

question "Do you consider yourself a spiritual person?" namely Connectedness with Nature, Transcendent Experiences, and Spiritual Activities.

Relationship with Religiosity. As expected, the subscales Spiritual Activities and Transcendent Experiences were associated with the ROS (r = .69–.85 and .29–.51, respectively). Again, an exception was found in the palliative cancer group that showed no association between Transcendental Experiences and the ROS (r = .16). The subscale Spiritual Activities was also associated with the question "Do you consider yourself a religious person?" (r = .45–.75). However, a relationship between Transcendent Experiences and considering oneself religious was only found in two samples.

Discriminant Validity. A relationship with internal LOC was not found for most of the SAIL scales, which demonstrates discriminant validity. Trust and LOC were associated in two of the five samples, and Meaningfulness and LOC in one sample.

Social Desirability. Virtually all SAIL scores were not contaminated by social desirable responding. Caring for others appeared to be related to the BIDR in one of the samples, namely the palliative cancer sample.

Final SAIL Without Awareness in the Present

The convergent validity appeared insufficient for the subscale Awareness in the Present. This subscale was unrelated to the SAIL total score, the FACIT-Sp, and the question "Do you consider yourself a spiritual person?" Therefore, we decided to remove Awareness in the Present from the SAIL. The final SAIL consists of seven subscales represented by 26 items.

Validity of the Final Seven-Subscale SAIL

The fit of the final seven-subscale SAIL was tested with a four-group CFA model and a one-group CFA model for the student sample; The student sample was not included in the multigroup CFA because one item was not assessed in this sample. The four-group model was used because it enabled us to determine in one test the equality of factor loadings in four samples. The fit indices indicated a sufficient fit (Table 5B). The nonsignificant chi-square difference between the unrestricted four-group model and the restricted model with equal factor loadings indicated that the factor loadings are equal across the four samples.

Support for the models was also found because the factor loadings appeared to be high. In the four-group model, standardized factor loadings ranged from .44 to .96 and the mean factor loading was .71. In the student sample, the item "I have had experiences where everything seemed perfect" had a low factor loading of .22, whereas other factor loadings ranged from .51 to .88 (mean of all factor loadings was .68).

TABLE 8 Hierarchical Confirmatory Factor Analyses Final Spiritual Attitude and Involvement List

Model	*df*	χ^2	RMSEA	CFI
7 factors	1145	1858.8	.030	.91
7 factors, 1 higher order factor	1201	2231.7	.035	.87
7 factors, 2 higher order factors	1197	2073.8	.033	.89
7 factors, 3 higher order factors	1189	2006.3	.032	.90

RMSEA = root mean square error of approximation; CFI = comparative fit index. Multigroup models for four samples were used (the student sample was excluded, as one item was not assessed).
All χ^2: $p < 0.001$.

Higher Order Factor Structure

The seven SAIL aspects were supposed to represent the three main dimensions of connectedness. To test this assumption, higher order CFAs were performed in a multigroup model for four samples; The student sample was again not included because one item was not assessed in this sample.

We tested four models: one model without a higher order factor and three models with one to three higher order factors (see Table 8). The model without a higher order factor appeared to be the best model. Of the higher order models, the model with three factors was the best one and fitted sufficiently.

The three factors clearly represented the three dimensions of Connectedness. The first factor Connectedness with Oneself consisted of the subscales Meaningfulness, Trust, and Acceptance, the second factor Connectedness with the Environment consisted of the subscales Caring for Others and Connectedness with Nature, and the last factor Connectedness with the Transcendent consisted of Transcendental Experiences and Spiritual Activities. The three factors were moderately to highly associated with each other: Connectedness with Oneself is .55 correlated with Connectedness with the Environment, and .41 with Connectedness with the Transcendent, and Connectedness with the Environment is .68 correlated with Connectedness with the Transcendent.

DISCUSSION

An important starting point for the development of the SAIL questionnaire was that it should be applicable to and valid for a broad group of people who either adhere to a faith or to no faith at all. The SAIL can indeed be considered applicable to a broad group of people, as its subscales refer to universal experiences, such as meaningfulness, trust, caring for others, and connectedness with nature. Spiritual Activities is the only subscale with a partly religious character, but even the items of this subscale are formulated

in such a way that they refer to general spiritual and religious experiences and behaviors, for example, "Do you participate in meetings, workshops and suchlike that are directed at spirituality or religion?" Much attention was given to the formulation of all the items, so as to guarantee a consistent meaning for a broad group of people.

The final SAIL consists of seven subscales and was tested among five samples that widely differed in terms of age, religious or spiritual background, and physical health. Factorial validity was demonstrated, and given that the CFA multigroup analyses on four of the five samples showed invariance in the pattern of factor loadings, the SAIL appeared to be interpreted similarly across four samples. The internal consistency and test–retest reliability were adequate and the subscales successfully withstood most of the convergent and discriminant validity tests.

However, "considering oneself spiritual" was related to only three SAIL scales, which indicates that this validity test partly failed. The experts' view of *spirituality* is apparently broader than the respondents' (laymen's) view. Our questionnaire was based on the opinions of experts instead of on the opinions of laymen, which may explain this failure. The reason for this choice was that it is common for laymen to describe a specific belief in their definition of *spirituality*, whereas our premise was that specific beliefs should not be included (de Jager Meezenbroek et al., 2010). Another reason to accept the broader view is that this view was based on the literature, and its validity was confirmed by the association between our SAIL and another, frequently used and validated spirituality questionnaire, namely the FACIT. Nevertheless, it is recommended to investigate the convergent validity of the SAIL subscales further, for example, by comparing the scores of those people who are expected to be high and low on spirituality.

Convergent validity of the subscale Awareness in the Present appeared to be insufficient, so this subscale was removed from the SAIL. Awareness in the Present was the only scale with negatively worded items. Therefore, it is not entirely certain whether this concept is not a valid aspect of spirituality or whether the negative outcome of our validity tests was an artifact. To determine whether awareness in the present is a valid aspect of spirituality, it is recommended to investigate the relationship between the SAIL and existing mindfulness questionnaires (e.g. Baer, Smith, & Allen, 2004; K. W. Brown & Ryan, 2003; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006).

One of the limitations of this study is that all the sample sizes (except the student sample size) were small, taking into account that a sample size of 200 is needed for small to medium models (Boomsma, 1983), and as a result, parameter estimates are less reliable. However, a consistent factor structure among the five samples was found, including one large sample of almost one thousand participants. Monte Carlo simulations have shown that replicable factors are estimated if factors are each defined by four or more measured variables and factor loadings are above .60 regardless of sample

size (Guadagnoli & Velicer, 1988). Our model largely meets this criterion, as all the factors but one consist of four or more items, and most factor loadings are above .60. Sample size also influences CFI values, which are lower with smaller sample sizes (Hu & Bentler, 1999). To prevent a Type II error rate, the indulgent criterion of CFI value equal or greater than .90 was applied.

A second limitation of this study is that the recruitment rate was rather low, especially among students (32%) and the population sample (29%). That said, our aim was not to characterize specific subpopulations. Instead, we wanted to test whether our questionnaire would be valid among different kind of samples. The samples did indeed differ widely in terms of age, religious or spiritual background, and physical health, and males and females were represented. However, education level was moderate to high in all samples. Therefore, it would be expedient to repeat the psychometric tests among a sample of low-educated people.

Our multidimensional questionnaire can be valuable for studying spiritual experiences of religious and nonreligious people. An intriguing theme for future research is to unravel which aspects of spirituality are most important in coping with a stressful event, such as cancer. To date, only the subdivision into the horizontal dimension (i.e., a feeling of meaning, peace, and connectedness to the self and others) and into the vertical dimension (i.e., the belief in and experience of connectedness with a higher power) has been explored, showing the horizontal dimension to appear more closely related to well-being than the vertical dimension (Krupski et al., 2006; Laubmeier, Zakowski, & Bair, 2004; McCoubrie & Davies, 2006; Zavala, Maliski, Kwan, Fink, & Litwin, 2008). Our new questionnaire can be used to determine which aspects of the horizontal dimension (i.e., meaningfulness, trust, acceptance, caring for others, or connectedness with nature) are most supportive in dealing with stressful events, such as cancer.

CLINICAL IMPLICATIONS

The spirituality scale developed in this study allows an investigation into spiritual aspects that are especially important for patients to deal with the negative consequences of their disease. Such knowledge would help psychosocial workers in hospitals to provide more adequate spiritual support.

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