

The Daily Spiritual Experience Scale: Development, Theoretical Description, Reliability, Exploratory Factor Analysis, and Preliminary Construct Validity Using Health-Related Data

Lynn G. Underwood, Ph.D.

Fetzer Institute

Jeanne A. Teresi, Ed.D., Ph.D.

Hebrew Home for the Aged at Riverdale and Columbia University Stroud Center

ABSTRACT

Spirituality and religiousness are gaining increasing attention as health research variables. However, the particular aspects examined vary from study to study, ranging from church attendance to religious coping to meaning in life. This frequently results in a lack of clarity regarding what is being measured, the meaning of the relationships between health variables and spirituality, and implications for action. This article describes the Daily Spiritual Experience Scale (DSES) and its development, reliability, exploratory factor analyses, and preliminary construct validity. Normative data from random samples and preliminary relationships of health-related data with the DSES also are included. Detailed data for the 16-item DSES are provided from two studies; a third study provided data on a subset of 6 items, and a fourth study was done on the interrater reliability of the item subset. A 6-item version was used in the General Social Survey because of the need to shorten the measure for the survey. A rationale for the conceptual underpinnings and item selection is provided, as are suggested pathways for linkages to health and well-being. This scale addresses reported ordinary experiences of spirituality such as awe, joy that lifts one out of the mundane, and a sense of deep inner peace. Studies using the DSES may identify ways in which this element of life may influence emotion, cognition and behavior, and health or ways in which this element may be treated as an outcome in itself, a particular component of well-being. The DSES evidenced good reliability across several studies with internal consistency estimates in the .90s. Preliminary evidence showed that daily spiritual experience is related to decreased total alcohol intake, improved quality of life, and positive psychosocial status.

(Ann Behav Med 2002, 24(1):22–33)

INTRODUCTION

The inner experience of spiritual feelings and awareness are an integral part of the everyday religious and spiritual lives of

This research was funded, in part, by the Fetzer Institute. We thank Dr. Frank Keefe, Dr. Jeanne Zechmeister, Leila Shahabi, Dr. Lynda Powell, and Dr. Scott Tonigan for data collection and use of that data in this article, and Katja Ocepek-Welikson for data programming. We thank Wayne Ramsey and Heidi Matteo for their help with the article.

Reprint Address: L. G. Underwood, Ph.D., Fetzer Institute, 9292 West KL Avenue, Kalamazoo, MI 49009. E-mail: info@fetzer.org

© 2002 by The Society of Behavioral Medicine.

many individuals. As far back as James's *The Varieties of Religious Experience: A Study in Human Nature* (1), there has been interest in this experience of the individual from a psychological perspective. This article presents the development of a Daily Spiritual Experiences Scale (DSES), the items of which attempt to measure everyday ordinary experience rather than particular beliefs or behaviors; although developed for the predominately Judeo-Christian U.S. population, it is intended to transcend the boundaries of particular religions.

Spirituality and religiousness have received increasing attention as potential health research variables. Frequent reference has been made to the body of data linking religious variables to mental and physical health outcomes (2–5). The National Institute on Alcohol Abuse and Alcoholism just funded a set of seven proposals after a request for applications to solicit research examining the relationship of spirituality to alcoholism. However, the particular aspects of religiousness and spirituality that have been examined vary across studies, which has resulted in a lack of clarity regarding the construct measured and an accompanying lack of clarity as to the implications each study has for action. The results of a recent meta-analysis of studies examining the relationship between religiousness and medical outcomes (6) have underscored the need for adequate measurement. Aligned with the concern that studies of this subject need more rigor and thoughtfulness, the National Institute on Aging and the Fetzer Institute cosponsored a meeting at the National Institutes of Health in March 1995, where participants examined conceptual and methodological issues at the interface of religion, health, and aging. After the meeting, a working group received support to develop a multidimensional approach to the measurement of religious and spiritual variables that could be used in health studies (7). This approach was particularly helpful due to the plethora of ways that exist to measure these variables, often with little or no justification given for the particular method used. Conceptual overlap was the rule, with scales that measured religious preference (8), attendance (reviewed in 9), or intrinsic versus extrinsic religiosity (10) and multidimensional sections of surveys (11). Also, scales either have tended to be solidly based in a single religious tradition (12) or, in trying to avoid that approach, have examined issues such as meaning and values from an existential perspective (13).

The working group identified daily spiritual experience (DSE) as one aspect of religiousness and spirituality that had never been fully addressed despite its anecdotal importance in individuals' lives and its potential connection to health. Underwood, in response to that recommendation, developed the

DSES. After the development of the instrument, the scale was included, with the author's permission, in a variety of studies. The data were made available to the author. The main purpose of this article is to describe the development of the DSES, including its reliability, exploratory factor analyses (EFAs), and preliminary construct validity. The relationship of DSE to health-relevant data is examined.

Theoretical Orientation and Definition of DSE

This scale is intended to measure a person's perception of the transcendent (God, the divine) in daily life and his or her perception of his or her interaction with or involvement of the transcendent in life. The items attempt to measure experience rather than particular beliefs or behaviors; therefore, they are intended to transcend the boundaries of any particular religion. Many characterizations of spirituality involve such an inner dimension (14). Development of this measure began by the examination of what constitutes the substantive feelings and thoughts that describe the interface of faith with daily life. It appeared that here might lie some of the proximal connections of spirituality with health. Through reflection on the aspects of the spiritual or religious perspective that weave through thought processes and feelings in daily events, an attempt was made to develop questions that would elicit those inner qualities as they express themselves at specific moments in the midst of daily life events. The intention was to determine the extent to which spiritual feelings and inner experiences might constitute an integral part of the life of the ordinary person and, ultimately, to examine the relation of these factors to health and well-being.

The decision was made at the outset to use the word *spiritual* rather than *religious* in the definition of the collection of items in this measure. Although there are different understandings of the distinction between religiousness and spirituality, the following clarifying statement has been useful in a variety of medical research settings:

Religiousness has specific behavioral, social, doctrinal, and denominational characteristics because it involves a system of worship and doctrine that is shared within a group. Spirituality is concerned with the transcendent, addressing ultimate questions about life's meaning, with the assumption that there is more to life than what we see or fully understand. Spirituality can call us beyond self to concern and compassion for others. While religions aim to foster and nourish the spiritual life—and spirituality is often a salient aspect of religious participation—it is possible to adopt the outward forms of religious worship and doctrine without having a strong relationship to the transcendent. (7, p. 2)

The spiritual, for the ordinary person, is most often and most easily described in language that has religious connotations. Religious language can be stated in such a way that it is more amenable to translation; for example, the word *God*, although not acceptable for some, can be interpreted by a person responding to a questionnaire to include various notions of the divine or a transcendent aspect of life, without losing its meaning to those for whom it has significance.

In preparation for a meeting on the role of spirituality and religiousness in disability at the National Institute of Child Health and Human Development in 1994, a model was developed (15) to reflect the integration of the variety of aspects of an individual's life. In addition to an integrative core, the model had four different dimensions of life: the vital (physical and emotional), the functional (intellectual and physical), the interpersonal (social and cultural), and the transcendent. The model examined how we influence others and they influence us; how we are shaped by our physical endowment, our environment; our emotional dispositions; and our orientation to the transcendent. Drawing from this model, the DSES assesses features that can affect physical and mental health, social and interpersonal interactions, and functional abilities. In turn, the physical and emotional can have effects on DSE, as do intellectual interpretations of meaning and belief, cultural environment and experiences, and interpersonal interactions.

Recent developments in cognitive neuroscience have encouraged the adoption of such an integrative model. For example, the issue of an integrative core is compatible with a variety of neuroscientific understandings, whether the core is seen as residing within a specific neural network (16) or as not necessarily synonymous with a physical location (17). Work by Damasio (18) has shown the incorrectness of our common assumption that if only we could get the emotions out of the way, our intellect could function more clearly. People with neurological deficits in the emotional area are actually incapacitated in much decision making. The driving force for decision making is somehow dependent on an integrative activity using emotions and more rational thought. In the same way, it is very possible that the integration of the transcendent sphere also may be crucial to decision making, behaviors, and attitudes. The DSES assesses features that, in this model (15), pass through the core of the person to affect physical and mental health, social and interpersonal interactions, and functional abilities.

The DSE construct represents those aspects of life that make up day-to-day spiritual experience for many people, a more direct assessment of some of the more common processes through which the larger concepts of religiousness and spirituality are involved in everyday life, grounding them in specifics. The items are designed to assess aspects of day-to-day spiritual experience for an ordinary person and should not be confused with measures of extraordinary experiences (e.g., near-death or out-of-body experiences and other more dramatic mystical experiences) that may tap something quite different and have a different relation to health outcomes. This choice was deliberate. Scales exist that measure these more extraordinary experiences (19). The experiences reflected in the DSES may be evoked by a religious context or by other events of daily life or by the individual's religious history or religious or spiritual beliefs. Underhill (20), a British theologian of the early 1900s, referred to this kind of experience as "practical" rather than what usually is thought of as "mystical," emphasizing the ordinariness of these experiences. The scale differs from other measures of religiousness such as religious coping (21), as it is not necessarily dealing with stressful life events. It also differs from religious motiva-

tion measures (10,22) that tap whether people are motivated by intrinsic or more socially driven religious factors and from the Spiritual Well-Being Scale (23,24), which examines existential and religious quality of life issues. Religious commitment or salience items tap the importance of religion and cognitive assessment of application of religious principles in daily life (25).

An important point is that there is no assumption that the more of these daily spiritual experiences (DSEs) you have, the better you are in spiritual terms. The intent is to capture a set of experiences that may play a strong role in the lives of many; such measures, to date, have been absent from our attempts to assess what factors might play important roles in the lives of individuals and their actions, thoughts, and attitudes.

Implicit in the model presented here is the assumption that there is a type of DSE that can contribute positively to health and that can be defined broadly to include spiritual, psychological, and social well-being as well as physical health. Analogously, although psychological stress has been extensively linked to health problems through specific physiologic effects, emotional and physical dispositions can buffer this stress (26). Positive emotional experiences have also been connected with positive effects on the immune system, independent of the negative effects of stress (27). Likewise, positive expectations for outcomes have been linked to positive immune effects (28,29). There may also be overlap between the endorsement of a "sense of deep peace" and the condition that leads to or emanates from direct neurologic and endocrine effects similar to those identified during meditation (30).

Despite work linking church attendance with health outcomes (31,32), this association has many potential confounding and mediating factors, such as social support effects, need for reasonable health to participate in public activities, and links with behavioral dictums of religious groups. Very little empirical work has sought to link the spiritual experiences of daily life with health outcomes. One suggestive study was that of Oxman, Freeman, and Manheimer (33), in which one of the items most strongly predictive of positive health outcome in cardiovascular disease was "I obtain strength and comfort from my religion" (elements that were incorporated into the DSES). The inclusion of the DSES in health studies has the potential for the establishment of a pathway by which religiousness and spirituality might influence physical and mental health.

METHODS

Development of the DSES

Content validity. To begin development of the scale, Lynn G. Underwood held in-depth interviews and focus groups with individuals from many religious perspectives. This process provided basic qualitative information regarding the spiritual experiences of a wide range of individuals. She also conducted a review of scales that attempt to measure some aspects of spiritual experience (19,32,34) and drew as well on a variety of theological, spiritual, and religious writings (35–40 are representative). The writings helped to categorize experiences to develop a concise set of items.

Refinement of the instrument involved several stages. First, Underwood elicited individual interpretations of the questions through semistructured interviews and refined the items in the light of the responses. Then, individual, open-ended interviews were conducted to confirm what the items actually meant to people responding to them. In this process, efforts were made to ground the questions in the specific whenever possible, although still keeping them broad enough to encompass a variety of perspectives and situations. Finally, she further revised the items based on a review of the instrument by representatives of a variety of spiritual orientations at a meeting of the World Health Organization Working Group on Spiritual Aspects of Quality-of-Life. This group included agnostics, atheists, Buddhists, Christians, Hindus, Jews, and Muslims. (Details of the qualitative methodology used in instrument development can be obtained from Underwood by request.)

The development process can be illustrated by the consideration of how to handle the question whether to include the word *God* in some of the items. Initial interviews with Christians, Jews, Muslims, agnostics, and atheists indicated a variety of words used to refer to the transcendent or divine, but the dominant word used was *God*. Although some aspects of spiritual experience could be addressed without this word, for many specific aspects a single word for the divine was necessary. In the subsequent testing of the instrument, in which Underwood explored with the respondents what they took the items to mean, most found the word *God* to be easily understood and the best word for them. Those outside the Judeo-Christian orientation, including Muslims, people from indigenous religious perspectives, and agnostics, were generally comfortable with the word, being able to "translate" it into their concept of the divine. The only group for which this wording did not translate easily was the Buddhists. There are a number of other items that do address Buddhist spiritual experience. The introduction to the instrument was subsequently designed to encourage people who are not comfortable with the word *God* to "substitute another idea which calls to mind the divine or holy for you."

Conceptual orientation and rationale for specific items. DSE is composed of a variety of concepts. It was expected that some aspects of DSE would be more important for some people than for others and that it was possible that specific components would be particularly important for mental and physical health. The interviews revealed that connection was an important concept. Western spirituality emphasizes a personal connection with God, whereas Eastern and Native American spirituality, for example, place more emphasis on a connection with all of life and on connection as being part of a greater whole (41). Two items were developed to address both people whose experience of relationship with the transcendent is one of personal intimacy ("I feel God's presence") and those who describe a more general sense of unity as their connection with the transcendent ("I experience a connection to all of life").

Many people experience frequent interaction with the transcendent as a fundamental part of life, an active involvement of the divine in the nitty-gritty of life, and not only in moments of

stress. "Social support from the divine" can be experienced as instrumental or emotional. Perception of a supportive interaction with the transcendent is measured in this instrument in three ways. The first way is that of strength and comfort ("I find strength in my religion or spirituality" and "I find comfort in my religion or spirituality"). These were initially separated into two items; however, they were highly intercorrelated so that, although conceptually different, a case can be made for use of only the strength item. Second, perceived divine love ("I feel God's love for me directly" and "I feel God's love for me through others"). These items measure whether the individual experiences God's love rather than whether one just believes that God loves people generically or that God and love are related conceptually. Feeling loved may prove important in seeking to quantify the relation of religious or spiritual issues to health outcomes. The quality of love imputed to God can be different from the many kinds of love shared by people, with a particular kind of love from others that many attribute to God. Divine love, directly and through others, can be experienced as affirming and can contribute to self-confidence and a sense of self-worth, independent of actions. The third aspect of interaction with the transcendent is when support from the divine may be experienced as inspiration or discernment ("I ask for God's help in the midst of daily activities" and "I feel guided by God in the midst of daily activities"). These items address the expectation of divine intervention or inspiration and a sense that a divine force has intervened or inspired. The guidance item was most often described similar to a "nudge" from God and more rarely as a more dramatic action.

The perception that life consists of more than physical states, psychological feelings, and social roles may help one in transcending the difficulties of present physical ills or psychological situations. ("During worship, or at other times when connecting with God, I feel intense joy which lifts me out of my daily concerns"). The language of this item translates from metaphysical terminology into more practical lay language by focusing on concrete examples that might occur in the context of a lively worship service or a walk in nature. This has been described by many as an important feature in dealing with chronic disease, pain, and disability (15).

A sense of wholeness and internal integration is reflected frequently in the spiritual literature of both Eastern and Western traditions, with an accompanying sense of inner harmony ("I feel deep inner peace or harmony"). During interviews, persons who had experienced depression insisted that they could have this experience even in the midst of feeling very distressed. This sense of peace has a transcendent dimension that may be affected but not determined by events and affect, and this question was designed to elicit something other than positive mood or psychological well-being.

Van Kaam (41) suggested that awe is the central quality of spiritual life and has an ability to elicit experience of the spiritual that crosses religious boundaries and affects people with no religious connections ("I am spiritually touched by the beauty of creation") (41).

Gratefulness ("I feel thankful for my blessings") is considered a central component of spirituality by many (42). Because

of the potential connections between gratitude and circumstances of life, external life circumstances or stressors may modify a respondent's feelings of gratefulness; however, some people find blessings even in the most dire circumstances.

The attitudes of compassion and mercy are more active and less passive than the qualities of experience just mentioned, but they still result in inner spiritual experience and, therefore, are included in this measure. Unconditional love, agape or compassionate love, is central to many spiritual traditions (41). The item "I feel a selfless caring for others," which may seem unwieldy, was easily understood by individuals representing a spectrum of educational levels. It describes a love centered on the good of the other and did not generally connote self-abnegation in the interviews assessing content validity. An excellent examination of this concept is found in Vacek (43). Mercy, giving others the benefit of the doubt, dealing with others' faults in light of one's own, and being generous of heart, describe inner experiences in which the spiritual can be evident in everyday life. The item "I accept others even when they do things I think are wrong" addresses the felt sense of mercy rather than the mere cognitive awareness that mercy is a good quality. This fundamental acceptance of others is not the same as forgiveness, which is based on response to a particular act. Vanier's writings (44), which use the example of attitudes toward those with developmental disabilities, address this concept thoughtfully.

The final two items assess spiritual longing ("I desire to be closer to God or in union with the divine"). This is a key concept in the Muslim tradition (45) and may be more relevant for those who are seeking interaction with the divine. The final item ("How close do you feel to God?") was originally included as a way of calibrating the previous question.

Item format. The measure includes 16 items described in the following paragraphs; the first 15 are scored using a modified Likert scale, in which response categories are *many times a day, every day, most days, some days, once in a while, and never or almost never*. (Use to date as reflected in this article has been such that lower scores reflect more frequent DSE: e.g., *many times a day* = 1, *never or almost never* = 6.) The introduction to the items states that

The list that follows includes items which you may or may not experience, please consider how often you directly have this experience, and try to disregard whether you feel you should or should not have these experiences. A number of items use the word God. If this word is not a comfortable one for you, please substitute another idea which calls to mind the divine or holy for you.

Each item is cast in positive terms. Initially, some items were cast in negative terms, but it became clear that this mode of assessment measured something other than the opposite to the concept being addressed, perhaps anomie or alienation. The 16th item, "In general, how close do you feel to God?," has four response categories: *not close at all, somewhat close, very close, and as close as possible*.

In addition to the 16-item scale, a 6-item version was developed for incorporation into surveys. The 6-item version of the scale, used in the Brief Multidimensional Measure of Religiosity and Spirituality (7), was developed by selection of items representing a few key aspects of DSE from the 16-item version. (This is not a recommended short form for this instrument.) The selection of these items was developed in conjunction with inputs from the National Institute on Aging/Fetzer working group, the goal being to have a set of items to complement other domains in the multidimensional instrument. The main reason for the presentation here of these 6 items is that they were embedded in the General Social Survey (GSS) for 1997–1998 (46) and therefore allowed us to examine some normative population data for a subset of DSES items. The strength and comfort questions were combined to read “I find

strength and comfort in my religion,” as the psychometric properties of the combined item were known, and it has been extensively used with some predictive data for health. The 2 items regarding love directly from God and love from God through others were also combined into 1 item, although it is recognized that it would be preferable to maintain the 2 separate items, as correlations with social support may vary between the 2. The additional items are those on presence, touched by beauty, and desire to be in union. Examination of the 6-item version in this article provides a basic measure of spiritual experience and allows us to examine the distributions of some of these experiences in the general population. Only extensive testing of the 16-item version in health studies will permit identification of the shorter list of items most predictive of positive health outcomes. See Table 1 for a list of items.

TABLE 1
Summary Statistics for the Daily Spiritual Experience Scale Across Four Sites: Item Means, Standard Deviations, Scale Alphas, and Intraclass Reliability Coefficients

Item Content	Chicago SWAN ^a		Loyola University ^b		GSS ^c		Corrected Item-Total Correlations			ICC Reliability (Ohio) ^g
	M	SD	M	SD	M	SD	Chicago SWAN ^d	Loyola University ^e	GSS ^f	
1. I feel God's presence.	2.76	1.66	3.00	1.35	3.23	1.67	.86	.79	.77	.71
2. I experience a connection to all life.	2.96	1.48	3.03	1.17	—	—	.69	.83	—	—
3. During worship, or at other times when connecting with God, I feel joy, which lifts me out of my daily concerns.	3.48	1.64	3.39	1.22	—	—	.85	.76	—	—
4. I find strength in my religion or spirituality	2.76	1.54	2.94	1.31	3.23	1.66	.88	.82	.82	.74
5. I find comfort in my religion or spirituality.	2.79	1.51	2.83	1.32	3.23	1.66	.88	.82	.82	.74
6. I feel deep inner peace or harmony.	3.22	1.47	3.38	1.00	3.26	1.40	.81	.67	.70	.64
7. I ask for God's help in the midst of daily activities.	2.91	1.70	3.39	1.39	—	—	.83	.75	—	—
8. I feel guided by God in the midst of daily activities.	3.22	1.73	3.60	1.26	—	—	.89	.82	—	—
9. I feel God's love for me, directly.	3.06	1.74	3.33	1.37	3.11	1.59	.89	.83	.83	.67
10. I feel God's love for me, through others.	3.03	1.57	3.22	1.28	3.11	1.59	.83	.76	.83	.67
11. I am spiritually touched by the beauty of creation.	2.58	1.34	2.51	1.26	2.71	1.51	.68	.57	.63	.75
12. I feel thankful for my blessings.	1.97	1.01	2.27	1.08	—	—	.73	.66	—	—
13. I feel a selfless caring for others.	2.94	1.26	2.80	1.05	—	—	.37	.49	—	—
14. I accept others even when they do things I think are wrong.	2.85	.99	2.70	1.04	—	—	.33	.36	—	—
15. I desire to be closer to God or in union with Him	2.63	1.50	2.75	1.35	3.14	1.62	.72	.75	.80	.78
16. In general, how close do you feel to God?	2.69	.89	2.24	.97	—	—	.72	.76	—	—

Note. For the GSS site, Items 4 and 5 are equivalent to Item 14b from the Short Form, and Items 9 and 10 are equivalent to Item 14e, also from the Short Form. SWAN = Study of Women Across the Nation; GSS = General Social Survey; ICC = Intraclass Correlation Coefficient.

^a*n* = 233. ^b*n* = 122. ^c*n* = 1,445. ^dScale α = .95. ^eScale α = .94. ^fScale α = .91. ^g*n* = 50.

Samples. Data from several samples are included in this article, as follows:

1. Rush-Presbyterian–St. Luke’s Medical Center, Chicago, conducted a series of psychometric analyses of the 16-item DSES as part of the Study of Women Across the Nation (SWAN), a multisite, multiethnic, multifactorial study of midlife (L. Shahabi & L. Powell, personal communication, March 2, 1999). The Chicago site contributed 233 cases for these analyses. All were women; 60% were White, 53% were Catholic, 18% were Protestant, 21% were Baptist, and 8% belonged to other religions. The mean age was 46.76 ($SD = 2.74$).

2. The Ohio University Medical Center examined the spiritual and religious dimensions of daily life of 45 patients with arthritis pain (47). The Ohio study contributed the interrater reliability estimates for the six DSES items contained in the GSS.

3. Loyola University (J. Zechmeister, personal communication, March 24, 1999) administered the 16-item DSES to a sample of 122 individuals from the University of Chicago area; 58% were full-time students. The sample was female (61%), male (49%), White (72%), non-White (28%), Catholic (49%), and non-Catholic (51%). Although the range in age was from 15 to 88, the mean was 27.7 ($SD = 13.4$).

4. The GSS for 1997–1998 (46) used the 6-item version of the DSES among 1,445 individuals nationally. This survey was designed to constitute a random, representative sample of the U.S. population geographically, socioeconomically, and racially. The sample was 79% White and 45% female, with a religious distribution representative of the U.S. population. The mean age was 45.64 ($SD = 17.06$).

Approach to the analyses. Presented next are (a) descriptive and normative data for the DSES, (b) estimates of reliability, (c) results of EFAs, and (d) preliminary evidence for con-

struct validity. Scale and item means and standard deviations are presented for several samples and within each sample for different sex, racial–ethnic, and religion subgroups. Estimates of internal consistency (Cronbach’s α) are presented across three samples; a fourth study contributed estimates of interrater reliability for a subset of DSES items, with the intraclass correlation coefficient. Estimates of test–retest reliability were also provided for the six items contained in the GSS version of the DSES. The results of EFAs are presented, and preliminary evidence for construct validity is discussed in terms of differences in DSES scores for different demographic and religion subgroups and correlations of DSE with psychological and other health-related variables.

RESULTS

Descriptive Statistics for the DSES

Table 1 shows means and standard deviations for the 16 DSES items across three studies: Chicago SWAN, Loyola University, and the GSS (the Ohio study provided interrater reliability estimates with respect to items contained in the GSS but no item frequencies). From a psychometric standpoint, most items, although somewhat skewed toward the more frequent tail of the distribution, demonstrate adequate variability. However, few respondents endorsed the *never or almost never* category for Items 11 through 14.

Examination of item frequencies (available from Underwood) and means (Table 1) showed that several statements were more frequently endorsed across sites. These were “I am spiritually touched by the beauty of creation,” “I am thankful for my blessings,” and “I desire to be closer to God or in union with him.” Those items less frequently endorsed were “During worship, or at other times when connecting with God, I feel joy which lifts me out of my daily concerns,” “I feel guided by God in the midst of daily activities,” and “I feel God’s love for me, directly.”

Correlations Among Items

Examination of the zero-order correlations among items (not shown here) for the SWAN study showed that most items were moderately to highly intercorrelated (average range of correlations = .60–.80). Two items, “I feel a selfless caring for others” and “I accept others even when they do things I think are wrong,” had lower correlations (in the .20s) with all other items. However, two items, “finds strength in religion, spirituality” and “finds comfort in religion, spirituality” were collinear. The correlation was .96; all responses were almost identical for both items. The item wording of the two items is very similar, and respondents did not appear to distinguish between the terms *comfort* and *strength*. If this pattern is observed in other samples, it is recommended that in future work one of the two collinear items be omitted. Although the GSS (46) version combines the items, from a psychometric standpoint, double-barreled items are to be avoided. Because of the problems of collinearity in this data set, EFAs were conducted for both a 16-item version and a 15-item version; however, results are shown only for the 15-item version (see Table 2) of the DSES.

TABLE 2

Exploratory Factor Analyses of the Daily Spiritual Experience Scale: Factor Loadings from the Structure Matrix

Short Item Wording	Factor 1	Factor 2
1. Presence	.90	.33
2. Connection	.69	.62
3. Joy when connecting	.88	.39
4. Strength in R/S	—	—
5. Comfort in R/S	.89	.38
6. Deep inner peace	.82	.48
7. God for help	.88	.26
8. Guided by God	.93	.29
9. Love through others	.87	.33
10. Love directly	.93	.33
11. Touched by beauty	.68	.60
12. Thankful for blessings	.74	.52
13. Selfless caring	.33	.77
14. Accept others	.27	.78
15. Desires to be in union	.77	.26
16. Close	.77	.27

Note. R/S = Religiousness/Spirituality.

Psychometric Analyses of DSES: Classical Test Theory Results

Test–retest of six items. It is expected that DSE is relatively stable over the short term. However, because this construct measures perceptions and feelings, scores may vary according to external stressors and emotional state. Therefore, assessing response stability over a relatively brief period is appropriate. Test–retest reliability currently is being assessed with the entire 16 items; however, the 6 items were incorporated into a test–retest of separate subscales of the Brief Multidimensional Measure of Religiousness/Spirituality, the results of which follow (48). Forty-seven treatment-seeking substance users were tested for 2-day response stability. The Spiritual Experience subscale had good response stability (Pearson product–moment correlation = .85; intraclass correlation coefficient = .73). The Cronbach’s alpha estimate of internal consistency was .88 for test and .92 for retest.

Interrater reliability. Interrater reliability is not a concern for most applications of the DSES because it is usually self-administered. However, if administered by an interviewer, say, to a frail or very old population, interrater reliability would be of concern. Table 1 presents interrater reliability estimates calculated by the Ohio site, with the intraclass correlation coefficient for 6 items representing 8 of the 16 DSES items (2 DSES items were combined in two analyses). As shown, the reliability coefficients were adequate, ranging from .64 to .78.

Internal consistency reliability. The internal consistency reliability estimates with Cronbach’s alpha were very high, .94 and .95 for the 16-item version of the scale and .91 for the 6-item scale used in the GSS (46).

EFA. Several EFAs were performed for the Chicago SWAN study. An exploratory principal components analysis was first performed to examine the dimensionality of the DSES. The item set tended to be unidimensional for this sample. This interpretation was supported by the fact that the first eigenvalue was about 10 times that of the second; this can be demonstrated graphically by the scree test, a plot of the eigenvalues against the factor rank.

An EFA with an oblique rotation was then performed. As shown in Table 2, nearly all items loaded highly on the first factor, with loadings ranging from .69 to .93, except for two items, which loaded at .33 and .27; these items loaded more highly on a second factor (these items were “feels selfless caring for others” and “accepts others even when they do wrong things”). However, a 2-item scale is generally undesirable and, in this case, not meaningful in terms of explained variance (about 8%). It is also to be noted that the items with explicit reference to God did not factor out separately from those without such reference.

Two other EFAs (not shown here) were performed with the dichotomization of items at two different points: (a) the combination of *never* and *once in a while* versus *some days* to *many times a day* and (b) the combination of *never*, *once in a while*, and *some days* versus *most days* to *many times a day*. The results of these analyses indicated that the second dichotomization per-

formed somewhat more consistently and yielded results more similar to those with the continuous response format. The internal consistency for this latter dichotomous version of the 16-item scale was .93. Additional exploratory analyses of two ways of dichotomizing items provided preliminary evidence that the items could be treated as binary if necessary for populations in which a Likert-type response continuum may be problematic (e.g., the frail or the very old). Details of these analyses are available from Underwood.

Preliminary Construct Validity: Differences in DSES Scores for Different Demographic and Religion Subgroups

Summary statistics for the DSES were examined across several samples and subgroups (see Table 3). Means on the DSES 16-item version are about 47 for both the SWAN ($SD = 18.69$) and Loyola ($SD = 13.81$) studies. The mean score for the 6-item GSS version was 18.68 ($SD = 7.91$). Of note are the lower mean scores for African American women in the SWAN study (37.78, $SD = 14.87$) in contrast to Whites (52.79, $SD = 18.58$), $t = 6.82$, $p < .01$. This indicates that the responding African American women reported a significantly greater degree of DSE than did Whites. This pattern was repeated for the GSS (46) 6-item version of the scale, $t = 8.44$, $p < .01$. This was consistent with other findings from the GSS (46) data and with studies indicating high levels of religiousness among African American women as measured by religious involvement (both organizational and nonorganizational) and subjective ratings (49).

As would be expected, the GSS (46) data showed that those who reported “no religion” had the highest GSS mean scores (25.91, $SD = 7.30$), that is, the least frequent daily spiritual experiences. Comparison of those with no religion with those who claimed to be either Protestant or Catholic showed that the former had significantly different mean scores, reflecting less frequent DSEs, $F = 126.60$, $p < .01$. Scheffé multiple range tests indicated that individuals with no religion had significantly less frequent daily spiritual experiences than did those who claimed to be Catholic or Protestant. (The score for those of self-proclaimed Jewish faith showed high frequency daily spiritual experiences; however, the subsample size was too small [26] to permit reliable inferences.) Women also reported significantly more frequent daily spiritual experiences than did men, $t = 6.26$, $p < .01$. This was also consistent with other GSS (46) data, with women scoring significantly higher than men on virtually every item in the other domains of religiousness or spirituality: public activity, private activity, coping, religious intensity, forgiveness, and beliefs.

Correlations With Psychosocial and Other Health-Related Variables

In the Chicago SWAN study, frequency of DSE (scored positively for this analysis) was significantly negatively correlated with a variety of psychosocial factors: anxiety assessed with the State–Trait Anxiety Inventory (50), depression measured with the Center for Epidemiologic Studies–Depression F (51), and the Cohen Perceived Stress Scale (52) (see Table 4). It

TABLE 3
Mean Scores on the Daily Spiritual Experience Scale for Different Demographic Subgroups by Site

	Sex		Ethnicity						Religion					
	Female	Male	White	African American	Hispanic	Other	Protestant	Catholic	Jewish	Baptist	Christian	None	Other	
Chicago SWAN ^a														
<i>M</i>	46.87	—	52.79	37.78	—	—	46.79	49.09	NA ^b	37.94	—	NA ^b	NA ^b	
<i>SD</i>	18.69	—	18.58	14.87	—	—	19.99	17.04	NA	15.61	—	NA	NA	
<i>n</i>	233	—	141	93	—	—	39	117	NA ^b	47	—	NA ^b	NA ^b	
% ^c	100	—	60.3	39.7	—	—	17.7	53.2	NA	21.4	—	NA	NA	
Loyola University ^d														
<i>M</i>	46.45	48.65	48.85	NA ^b	40.00	—	40.65	43.75	—	—	—	NA ^b	46.93	
<i>SD</i>	13.48	14.51	14.17	NA	12.40	—	10.02	14.25	—	—	—	NA	7.04	
<i>n</i>	74	46	88	NA ^b	12	—	13	60	—	—	—	NA ^b	14	
% ^c	60.7	37.7	72.1	NA	9.8	—	10.7	49.2	—	—	—	NA	11.5	
GSS ^e														
<i>M</i>	17.49	20.14	19.28	14.93	—	19.24	16.53	19.96	25.08	—	16.35	25.91	17.06	
<i>SD</i>	7.42	8.25	7.91	6.37	—	8.59	7.10	7.45	8.39	—	6.79	7.30	7.37	
<i>n</i>	791	654	1,143	198	—	104	783	370	26	—	23	198	17	
% ^c	54.7	45.3	79.1	13.4	—	7.2	55.3	26.1	1.8	—	1.6	14.0	1.2	

Note. Individual sample sizes do not sum to total sample size because some sample sizes were too small for inclusion. SWAN = Study of Women Across the Nation; GSS = General Social Survey. ^a*n* = 233; theoretical range = 16–94, observed range = 17–89; ^bSample size was too small for this group (< 10). ^cThe percentage of the column category in each sample; for example, 100% of the SWAN study respondents were female. ^d*n* = 122; theoretical range = 16–79, observed range = 16–75. ^e*n* = 1,445; theoretical range = 6–36, observed range = 6–36.

TABLE 4

Correlations Between the Daily Spiritual Experience Scale and Psychosocial and Other Health-Related Factors (SWAN Study)

Factor	Correlation
Quality of Life (SF-36)	.240**
Sleep Problems	-.060
Physical Ailments	-.110
Alcohol Consumption	-.200**
Anxiety	-.394**
Center for Epidemiological Studies–Depression	-.220**
Speilberger Anger–Coping Scale	-.303**
Cohen Perceived Stress	-.197**
Cook Medley Hostility	-.157*
Scheirer Optimism	.352**
Berkman Perceived Social Support	.183**

Note. The Daily Spiritual Experience Scale was scored in the positive direction for these analyses. The following scales were scored such that a high score reflects more positive outcomes: Quality of Life, Optimism, Social Support. SWAN = Study of Women Across the Nation; SF = Short Form.

* $p < .51$, two tailed. ** $p < .01$, two tailed.

was positively significantly correlated with Scheirer's Optimism Scale (53) and Berkman's scale of Perceived Social Support (54). The DSES was significantly negatively correlated with alcohol consumption. This reflected the sum alcohol intake, combining wine, beer, and liquor, with more DSE linked with less daily alcohol intake. Also, the more DSE, the higher the Short Form-36 rating (55) of quality of life. No significant correlations were observed with self-reported sleep problems or with a self-report of physical symptoms.

In the Loyola study, more frequent DSE was correlated with more positive affect (Pearson's correlation = .29, $p < .01$, two-tailed) when measured with the Watson and Clark Positive and Negative Affect Scale (56). No significant correlation occurred with negative affect when that scale was used.

DISCUSSION

In general, the findings reported here support the use of the DSES to measure DSE. The DSES demonstrated good internal consistency reliability across all samples. The high internal consistency estimates for the DSES suggest that the items function together to consistently measure the spiritual experience construct. Preliminary interrater reliability data showed acceptable agreement for the subset of items examined.

Preliminary construct validity was established through examination of the mean scale scores across sociodemographic subgroups. The DSES also appeared to discriminate between religion, sex, and racial subgroups in a fashion consistent with and predicted from the literature. Evidence of construct validity was also provided by examination of correlations of the DSES with health and quality of life variables. Significant associations in the expected direction were observed for most variables.

Examination of the item distributions across several samples indicated that the items and the scale have adequate item

distributions and are not badly skewed. The highest cross-population mean was for "being spiritually touched by the beauty of creation." This item was designed to address a broad population. The central position of awe in spiritual experience was reinforced by these results. If ultimate links with health outcomes are found for this item, this might mean that exposure to nature may be a way of encouraging and enriching the transcendent dimension of life in a particular accessible way.

Another item with a high mean was "experiencing deep inner peace." However, this was more rarely reported as occurring *many times a day* or *every day* for the different studies than was the "spiritually touched by beauty" item. Although this aspect of spiritual experience is highly prized, it seems to be less accessible.

Although these two items had mean scores indicative of a higher frequency of report, there were relatively large proportions of the samples that endorsed the categories *many times a day* or *never or almost never*. This pattern was true of most DSES items. In future work, it may be important to investigate whether endorsement of responses at the extreme ends of the spectrum is associated with particular health outcomes, attitudes, and behaviors. Another interesting finding from the GSS, based on cross-sectional data, is that 42 to 43% of the sample reported that they "experience God's presence," "feel strength and comfort from their religion," and "feel God's love" *everyday* or *many times a day*. The role that these daily experiences may play in informing decision making, shaping motivations, and influencing health outcomes needs to be investigated.

Preliminary EFAs suggests that this scale is unidimensional; however, two items did not load as highly on the first factor and, if combined with additional like items, might form a separate factor in other analyses. Further work will investigate this result. One caveat is that only an EFA was performed. It is acknowledged that the ideal situation would be to conduct EFAs on more data sets and to use other data sets or to use random subsamples of data sets for the confirmatory factor analyses. However, this sample did not permit such subdivision. Confirmatory factor analysis is planned as more data emerge from the many health studies in which this instrument has been embedded. The items with explicit reference to God did not factor out separately from the others, which supports achievement of one of the goals of the instrument: to compose an instrument that addresses a possible common ground that transcends many religious boundaries.

One issue that cannot be avoided in any psychometric assessment is the possibility of bias borne of self-report. Many of the items require a certain kind of discrimination between events. "I accept others even when they do things I think are wrong," for example, requires an inner judgment to be made that acceptance is indeed taking place, in such a way that it will feed into feelings and attitudes and behaviors. It may be that there are some people who take a very critical view of their own inner experiences and, therefore, rate themselves as having the experience less frequently than someone who might be less discerning of their own real attitude. For elaborations of some of these issues, see Underwood (57). For this reason, the combination of

this measure with other religious measures and measures of values and behaviors may be warranted as further work develops.

Implications for Health and Well-Being

Better social support has been connected to improved health in a variety of settings and with a variety of measures (58). Although cross-sectional, the links shown with perceived social support may identify possible ways in which DSE can enrich our experiences of relationships with others, creating stronger, more supportive bonds with others. Also the "social support from the divine" element in this measure may tap an additional source of social support for the many individuals who report significant DSE of an intimate nature. Recent work shows better health in those with more types of social relationships (59), and this measure looks at an additional type of relationship or connection on which to draw.

The potential that DSE might behave as a stress buffer is reinforced by the positive association with psychosocial variables such as optimism and positive affect and the negative association with perceived stress. Further longitudinal studies of health outcomes could clarify these associations. The negative associations with anxiety and depression in this cross-sectional work could merely show that those who are depressed and anxious are less likely to have frequent daily spiritual experiences. Ways to determine whether there is a buffering effect of DSE on depression and anxiety might include the use of prospective studies or ecological momentary assessment.

Understanding deeply seated emotional factors people define in spiritual terms may help to identify ways to effect behavior and attitude changes that can be beneficial to physical and emotional health. Although based on cross-sectional data, the connection of alcohol intake with DSE shown in this study gives us an indication of the kind of research work that may be possible. DSE may identify something that buffers one during the stresses and strains of lives and relationships. In this context, DSE may play a role in the creation of an internal environment in which alcohol may not be perceived as a need.

The finding that DSE is significantly associated with quality of life is suggestive. The feelings of joy, comfort, and connection that are tapped by this instrument could provide understanding of the potential benefit of encouraging spiritual aspects of life for individuals experiencing various forms of illness, for example, people with disabilities and chronic pain. Information on the influence of DSE on well-being and health could provide a resource for dealing with illness or a source of resilience for those at risk. There may be a variety of ways to enrich this aspect of life, from choral singing to hiking in nature to natural views from hospital rooms to private reading. This aspect of life could be enriched through referral to a religious setting, if that is a part of a particular person's life, or the recommendation of something as basic as writing about one's life story from the perspective of meaning, or the "more than" perspective. Defining the self in a way that does not depend on physical functioning can be helpful when experiencing chronic disease and disability (60). A number of religious and spiritual activities could encourage more frequent DSE. Just the acknowledgment of the potential

importance of this aspect of life may help us to better design social support interventions or psychosocial approaches to depression and pain.

Further work is being conducted on the DSES; for example, the DSES has been used in three large studies of physical health outcomes and in other smaller studies. In addition to the studies outlined next, the DSES is being used in an ongoing study at Duke University examining the effect of DSE on health care utilization and length of hospital stay. A version has been added to ENRICHED, a National Heart, Lung, and Blood Institute multicenter trial of a social support intervention for post myocardial infarction patients. Qualitative and quantitative evaluation on a non-Judeo-Christian, Asian population is also underway at the University of California, San Francisco.

The results of the construct validity analyses seem to suggest that higher DSE may be positive; these conclusions are based on positive correlations of the DSES with variables such as quality of life and negative correlations with anxiety, depression, and alcohol consumption. However, it is not possible with cross-sectional data to make a definitive statement regarding the impact of DSE.

These preliminary findings support the use of the scale to measure DSE and its use in health studies. It has been incorporated into a variety of health-related research, where an experiential scale of this type has been well received. As well as appealing to the less religious, it also addresses aspects of spirituality that resonate with the most deeply religious and spiritual. It holds promise as a measure of features of daily life, with possible implications for physical and mental health and well-being.

REFERENCES

- (1) James W: *The Varieties of Religious Experience: A Study in Human Nature*. New York: Modern Library, 1994 (1902).
- (2) Strawbridge WJ, Cohen RD, Shema SJ, Kaplan GA: Frequent attendance at religious services and mortality over 28 years. *American Journal of Public Health*. 1997, 8:957-961.
- (3) Levin JS: How religion influences morbidity and health: Reflections on natural history, salutogenesis, and host resistance. *Social Science and Medicine*. 1996, 43:849-864.
- (4) Pargament KI, Smith BW, Koenig HG, Perez L: Patterns of positive and negative religious coping with major life stressors. *Journal for the Scientific Study of Religion*. 1998, 37:710-724.
- (5) Koenig HG: *Is Religion Good for Your Health?* Binghamton, NY: Haworth, 1997.
- (6) Sloan RP, Bagiella E, Powell T: Religion, spirituality, and medicine. *Lancet*. 1999, 353:664-667.
- (7) Fetzer Institute, National Institute on Aging Working Group: Multidimensional Measurement of Religiousness, Spirituality for Use in Health Research. *A Report of a National Working Group Supported by the Fetzer Institute in Collaboration With the National Institute on Aging*. Kalamazoo, MI: Fetzer Institute, 1999.
- (8) Bradley MB, Green NM, Jones DE, Lynn M, McNeil L: *Churches and Church Membership in the United States: 1990*. Atlanta, GA: Glenmary Research Institute, 1992.
- (9) Koenig H, Fetterman A: *Religion and Health Outcomes: A Review and Synthesis of the Literature*. Methodological Ap-

- proaches to the Study of Religion, Aging, and Health. Washington, DC: 1995.
- (10) Hoge D: A validated intrinsic religious motivation scale. *Journal for the Scientific Study of Religion*. 1972, 11:369–376.
 - (11) Idler EL, Kasl SV: Religion among disabled and nondisabled elderly persons: I. Cross-sectional patterns in health practices, social activities, and well-being. *Journal of Gerontology: Social Sciences*. 1997, 52B:S294–S305.
 - (12) Benson PL, Donahue MJ, Erickson JA: The Faith Maturity Scale: Conceptualization, measurement, and empirical validation. In Lynn ML, Moberg DO (eds), *Research in the Social Scientific Study of Religion* (Vol. 5). Greenwich, CT: JAI, 1993, 1–26.
 - (13) Schwartz SH, Bilsky W: Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*. 1987, 53:550–562.
 - (14) McGinn B: The letter and the spirit: Spirituality as an academic discipline. *Christian Spirituality Bulletin*. 1993, 1(2):2–9.
 - (15) Underwood L: A working model of health: Spirituality and religiousness as resources: Applications to persons with disability. *Journal of Religion, Disability and Health*. 1999, 3(3):55–71.
 - (16) Tononi G, Edelman G: Consciousness and complexity. *Science*. 1998, 282:1846–1851.
 - (17) Bennett WJ: Neuroscience and the human spirit. *National Review*. 1998, 50(25):32–35.
 - (18) Damasio A: *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Avon, 1994.
 - (19) Hood R: The construction and preliminary validation of a measure of reported mystical experience. *Journal for the Scientific Study of Religion*. 1975, 22:353–365.
 - (20) Underhill E: *Practical Mysticism*. New York: Dutton, 1914.
 - (21) Pargament KI: *The Psychology of Religion and Coping: Theory, Research, Practice*. New York: Guilford, 1997.
 - (22) Allport G, Ross J: Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*. 1967, 5:447–457.
 - (23) Paloutzian RF, Ellison CW: Loneliness, spiritual well-being and quality of life. In Peplau LA, Perlman D (eds), *Loneliness: A Sourcebook of Current Theory, Research, Research and Therapy*. New York: Wiley Interscience, 1982, 224–237.
 - (24) Ellison CW: Spiritual well-being: Conceptualization and measurement. *Journal of Psychology and Theology*. 1983, 11:330–340.
 - (25) Williams DR: Commitment. In Fetzer Institute, National Institute on Aging Working Group: Multidimensional Measurement of Religiousness/Spirituality for Use in Health Research, *A Report of a National Working Group Supported by the Fetzer Institute in Collaboration with the National Institute on Aging*. Kalamazoo, MI: Fetzer Institute, 1999, 72.
 - (26) Cohen S, Kessler R, Underwood-Gordon L (eds): *Measuring Stress: A Guide for Health and Social Scientists*. New York: Oxford University Press, 1995.
 - (27) Stone AA, Bovbjerg DH: Stress and humoral immunity: A review of the human studies. *Advanced Neuroimmunology*. 1994, 4:49–56.
 - (28) Flood AB, Lorence DP, Ding J, et al.: The role of expectations in patients' reports of post-operative outcomes and improvement following therapy. *Medical Care*. 1993, 31:1043–1056.
 - (29) Roberts AH, Kewman DG, Mercier L, et al.: The power of non-specific effects in healing: Implications for psychosocial and biological treatments. *Clinical Psychology Review*. 1995, 12:375–391.
 - (30) Davidson R, Kabat-Zinn J, Schumacher J, et al.: *Alterations in Brain and Immune Function Produced by Mindfulness Meditation*. Manuscript submitted for publication, 2002.
 - (31) Hummer RA, Rogers RG, Nam CB, et al.: Religious involvement and U.S. adult mortality. *Demography*. 1999, 36:273–285.
 - (32) Idler EL, Kasl SV: Religion among disabled and nondisabled elderly persons: II. Attendance at religious services as a predictor of the course of disability. *Journal of Gerontology: Social Sciences*. 1997, 52B:S306–S316.
 - (33) Oxman TE, Freeman Jr. DH, Manheimer ED: Lack of social participation or religious strength and comfort as risk factors for death after cardiac surgery in the elderly. *Psychosomatic Medicine*. 1995, 57:5–15.
 - (34) Elkins DN, Hedstrom LJ, Hughes LL, Leaf JA, Saunders C: Toward a humanistic–phenomenological spirituality: Definition, description, and measurement. *Journal of Humanistic Psychology*. 1988, 28(4):5–18.
 - (35) Buber M: *I and Thou* (Kaufmann W, trans.). New York: Touchstone, 1996 (1937).
 - (36) De Wit H: *Contemplative Psychology*. Pittsburgh, PA: Duquesne, 1991.
 - (37) Hanh TN: *A Joyful Path: Community, Transformation and Peace*. Berkeley, CA: Parallax, 1994.
 - (38) Merton T: *Life & Holiness*. New York: Doubleday, 1969.
 - (39) van Kaam A: *Formation of the Human Heart* (Formative Spirituality Series, Vol. 3). New York: Crossroads, 1991.
 - (40) Smith H: *The World's Religions: Our Great Wisdom Tradition* (Rev. Ed.). San Francisco: Harper, 1991.
 - (41) van Kaam A: *Fundamental Formation* (Formative Spirituality Series, Vol. 1). New York: Crossroads, 1986.
 - (42) Steindl-Rast D: *Gratefulness, the Heart of Prayer—An Approach to Life in Fullness*. New York: Paulist, 1984.
 - (43) Vacek EC: *Love, Human & Divine: The Heart of Christian Ethics*. Washington, DC: Georgetown University Press, 1994.
 - (44) Vanier J: *Becoming Human*. Mahwah, NJ: Paulist, 1999.
 - (45) Lofty M: *WHO and Spirituality, Religiousness and Personal Beliefs (SRPB): Report on WHO Consultation June 22–24, 1998*. Unpublished report. World Health Organization, Division of Mental Health and Prevention of Substance Abuse. 1998.
 - (46) David JA, Smith TW, Marsden PV: *General Social Surveys, 1972–2000 Cumulative Codebook*. Chicago: National Opinion Research Center, 2001.
 - (47) Keefe FF, Affleck G, Lefebvre J, et al.: Living with rheumatoid arthritis: The role of daily spirituality and daily religious and spiritual coping. *Journal of Pain*. 2001, 2:101–110.
 - (48) Tonigan J, Walter S, Underwood L: *Test–Retest Study of the Brief Measure of Religiousness and Spirituality Among Treatment Seeking Substance Users*. Manuscript submitted for publication, 2002.
 - (49) Ellison C: Religious involvement and self perception among Black Americans. *Social Forces*. 1993, 71:1027–1055.
 - (50) Spielberger CD, Gorus R, Lushene R, Vagg P, Jacobs G: *Manual: For the State–Trait Anxiety Inventory (Form Y)*. Palo Alto, CA: Consulting Psychologists Press, 1983.
 - (51) Radloff LS: The CES–D scale: A self report depression scale for research in the general population. *Applied Psychological Measurement*. 1977, 1:385–401.
 - (52) Cohen S, Karmarck T, Mermelstein R: A global measure of perceived stress. *Journal of Health and Social Behavior*. 1983, 24:385–396.
 - (53) Scheirer MF, Carver CS, Bridges MW: Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and

- self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*. 1994, 67:1063–1078.
- (54) Seeman TE, Berkman LF: Structural characteristics of social networks and their relationship with support in the elderly. *Social Science and Medicine*. 1988, 7:737–749.
- (55) McHorney CA, Ware Jr. JE, Lu JF, Sherbourne CD: The MOS 36-item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. *Medical Care*. 1994, 32:40–66.
- (56) Watson D, Clark LA, Tellegen A: Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*. 1988, 54:1063–1070.
- (57) Underwood LG: The human experience of compassionate love: Conceptual mapping and data from selected studies. In Post SG, Underwood LG, Schloss JP, Hurlbut WB (eds), *Altruism and Altruistic Love: Science, Philosophy, and Religion in Dialogue*. New York: Oxford University Press, 2002.
- (58) Cohen S, Underwood L, Gottlieb B (eds): *Social Support Measurement and Intervention: A Guide for Health and Social Scientists*. New York: Oxford University Press, 2000.
- (59) Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney Jr. JM: Social ties and susceptibility to the common cold. *Journal of the American Medical Association*. 1997, 277:1940–1944.
- (60) Brown J: *The Self*. Boston: McGraw-Hill, 1998.