



**TECHNICAL REPORT:
DEVELOPMENT AND VALIDATION**

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Introduction

The STI is an online, self-report assessment of spiritual development comprised of five domains and 33 scales. The STI is based on a relational model of spiritual development called The Connected Life. The five domains of The Connected Life include:

- Connecting to Self & Others
- Connecting to God
- Connecting to Spiritual Community
- Connecting to Spiritual Practices
- Connecting to God's Kingdom

The STI offers both individual and group reports. Individual reports provide participants valuable insights and a practical, personalized growth plan. Group reports provide school and church administrators actionable results to strengthen their spiritual formation programs.

The 33 STI scales have been developed over a decade based on a relational spirituality model. Scale development was also informed by a large empirical study of spirituality that took place over a four-year period.

The STI has been developed according to current psychometric standards. This report presents a summary of reliability and validity evidence gathered to date, in accordance with *The Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 1999). Primary applications of the STI for spiritual growth, spiritual formation programs, and leadership development are briefly discussed.

Theoretical Background for Measuring Relational Spirituality

Measurement of religiousness and spirituality (RS) has been an important topic in the psychology of religion and spirituality for at least the last half century. More than a quarter a century ago, Gorsuch (1984) asserted that the dominant paradigm in the psychology of religion was one of measurement, which represented both a boon and bane for the field. This paradigm helped establish validity in the field, but has also limited advances in a number of ways.

The Measurement Paradigm

The measurement paradigm is reflected by the number of different measures developed to assess spirituality and related constructs. In an effort to consolidate information about available measures and encourage researchers to refrain from continuing to reinvent the measurement wheel, Hill and Hood (1999) published a compendium reviewing 125 measures of religiosity and spirituality developed through 1996. However, the proliferation of new measures has continued apace. Conservative estimates suggest that

another 100 measures or more have been developed in the past 15 years (Hill & Smith, in press).

This plethora of measures highlights one of the underlying problems in the field: the lack of broad theory informing measurement and research. Hill et al. (2003) noted the paucity of theory-driven research connecting RS to broad-based psychological theories. Hill (2005) cited a lack of conceptual clarity and theoretical grounding within the measurement paradigm as primary contributing factors to the lack of coherence in the field in spite of the availability of an abundance of useful measures. Kirkpatrick (2005) was even more critical in his assessment of the field, commenting that the field has made “embarrassingly little progress since its inception a century ago” (p. 101).

This measurement paradigm has not, however, been entirely fruitless. Many new measures have contributed to the advancement of the field by meeting one or more of the four criteria that Gorsuch (1990) identified as justification for the development of a new measure: a) existing measures are not psychometrically adequate to the task; b) there are no measures available for particular constructs; c) conceptual or theoretical issues demand modification of existing measures; and d) no existing measure appears usable with a specific clinical population. Moreover, theoretical advances in the field have necessitated new measures in the past two decades (Hill & Smith, in press), and have further emphasized the need for measures of RS to be connected to broad psychological theories.

Toward a Multilevel Interdisciplinary Paradigm

Emmons and Paloutzian (2003) introduced the idea that the psychology of religion field is moving towards a new paradigm as a product of the explosion of measures within the field. A benefit of the diverse research pursuits has been forming points of contact between psychology of religion and spirituality and a wide variety of other disciplines both within and outside of psychology proper. Emmons and Paloutzian observed that the field has changed sufficiently to warrant the claim that it is currently functioning under a distinctly different paradigm than that of measurement, which they labeled a “*multilevel interdisciplinary paradigm*” (p. 395).

Emmons and Paloutzian (2003) described this new paradigm as having three key components. First, analysis of a given construct takes place at multiple levels. Paloutzian and Park (2005) fleshed this idea out further, suggesting that findings at different levels of analysis may be equally valid in spite of having different conclusions. Second, the approach to RS is nonreductive in nature. That is, research in religion and spirituality should not assume RS experiences can be explained away by some more basic underlying process. Third, progress in RS research and assessment is advanced with the integration of theory and findings from related fields (e.g., neurobiology, philosophy, theology). Zinnbauer and Pargament (2005) discussed the empirical exploration of religiousness and spirituality, citing the development of a relational metapsychology (cf. Hall, 2004; Hall & Porter, 2007) as a leading effort towards multidimensional analysis. The STI advances this line of theory and research.

A Relational Spirituality Theory

One line of research making inroads in integrating theoretical developments from multiple sources that has enriched the psychology of RS is a relational perspective on human growth and development. This relational model began to emerge in the mid-twentieth century and represents the convergence of multiple fields and disciplines (Hall, 2007a, 2007b). This process has developed further with the grouping of a number of contemporary psychoanalytic theories under the rubric of “relational psychoanalysis” (Mitchell & Aron, 2000). This shift can also be seen in attachment theory (Bowlby, 1969/1982; 1973; 1980) and in the interdisciplinary field labeled by Daniel Siegel as “interpersonal neurobiology” (Siegel, 1999). Siegel (2001, p.67) succinctly defined this broad relational perspective: “...*interpersonal neurobiology* presents an integrated view of how human development occurs within a social world in transaction with the functions of the brain that give rise to the mind.” In an example of consilience as described above, all these theories are converging in suggesting that social, emotional, and spiritual development occur in the context of close interpersonal relationships.

Over the past decade, a number of scholars have begun to develop a conceptual framework of theistic spirituality that places relationality at its core. This emerging paradigm has come to be called “relational spirituality” by a number of scholars (Hall, 2004, 2007a, 2007b; Leffel, 2007a, 2007b, 2007c; Sandage, Link, & Jankowski, 2010; Shults & Sandage, 2006). Consistent with expectations within an interdisciplinary paradigm of theory and research, numerous theories from a range of disciplines are coalescing to form a broad relational framework for understanding human development. For example, attachment theory (Bowlby, 1969/1982; 1973; 1980), infant research (Beebe & Lachmann, 1988), affective neuroscience (Bucci, 1997; Schore, 1994; Siegel, 1999), and relational psychoanalysis (Mitchell, 2000) are all converging in suggesting that experiences in attachment relationships influence the development of brain systems that mediate social and emotional development.

In an effort to integrate and apply advances from several of these fields of research, Hall (2004) developed a broad relational spirituality theory comprised of five central organizing principles. Drawing on recent work in the area of affective neuroscience (Schore, 1994), interpersonal neurobiology (Siegel, 1999), emotional information processing (Bucci, 1997), and memory (Schacter, 1996; Solms & Turnbull, 2002), Hall’s model proposed the foundational principle that “people are fundamentally motivated by, and develop in the context of emotionally significant relationships” (Hall 2004, p. 8).

Within this foundational principle, his theory proposed that there are two distinct ways of knowing and processing relational experiences and two corresponding forms of memory (principle 2): explicit knowledge/memory and implicit relational knowledge/memory. Implicit relational knowledge (Stern et al., 1998) refers to one’s “gut-level” sense of how significant relationships work. Patterns in people’s implicit experiences with attachment figures become “internalized” in implicit memory, as (implicit) templates (principle 3) through which the meaning of future relational experiences are evaluated (principle 4). These templates have been variously referred to as emotion schemas (Bucci, 1997), mental models (Siegel, 1999), object representations in object relations theory (e.g., Fairbairn,

1952), and internal working models in attachment theory (Bowlby, 1973), all of which point to representations of relational experiences that are encoded in implicit memory, which form the foundation of the self because they are processed automatically and nonconsciously (principle 5).

Applying this model to spiritual development, Hall (2004) argued that the internal dimension of persons is not separable into “spiritual” and “psychological” components; rather it is psychospiritual unity (Benner, 1998). From this perspective, it is not possible to separate implicit relational processes from “spiritual processes,” as they are seamlessly woven together. The implication is that implicit relational experiences form the foundation of the emotional appraisal of meaning in all aspects of spiritual functioning, including one’s relationship with God, rather than explicit, symbolic, knowledge of God or theology. Relational spirituality theory, then, would suggest that one’s internal working models, or patterns of relationship, with humans, as defined by an implicit relational framework, are reliably associated with one’s spiritual functioning at an implicit level. There is now a growing body of empirical evidence to support this theory.

Hall and his colleagues have argued and provided empirical support for the notion that internal working models of human attachment figures generally parallel internal working models of God as an attachment figure at the implicit/experiential level—referred to as the “implicit IWM correspondence” (Hall et al. 2009; Fujikawa, et al. 2011). A growing body of research using implicit measures of human attachment is supporting the notion of implicit correspondence (e.g., Birgegard & Granqvist, 2004; Cassiba, Granqvist, Costantini, & Gato 2008; Granqvist, Ljungdahl, & Dickie, 2007).

A recent study, however, used an implicit coding method for both adult and God attachment. In this study, Fujikawa et al. (2011) used the AAI coherence coding method on both the AAI and a spiritual interview modeled after the AAI (Spiritual Experiences Interview; SEIn). They found a 68% agreement on attachment classification and a Cramér’s ϕ of .50, indicating a strong association between the SEIn and AAI state of mind classifications. The balance of the research literature suggests that people’s experiential relationship with God is mediated through, and influenced by, internal working models of human attachment figures.

Foundations for the STI: The Spiritual Assessment Inventory

As the threads of a relational spirituality theory were coming together, Hall and Edwards (1996; 2002) developed one of the earliest measures of spirituality from an explicitly relational perspective, which was a precursor to an emerging relational spirituality paradigm: the Spiritual Assessment Inventory (SAI). It is briefly described here because the Spiritual Transformation Inventory (STI) is in some ways a continuation and broadening of the theoretically driven measurement trajectory of the SAI.

Hall and Edwards (1996; 2002) developed the SAI for two primary reasons: 1) while several measures of spiritual development had relational aspects, none were specifically

informed by a relational theory; and, 2) few measures had proven to be clinically useful for psychotherapists and pastoral counselors. The SAI's theoretical framework is distinct from the then-dominant framework in the psychology of religion: intrinsic and extrinsic (I/E) religious orientation. It draws on the theoretical insights of object relations theory, which is very congruent with attachment theory and consistent with a sizable literature on God images, indicating that one's relational/emotional development is mirrored in one's relationship with the Divine (Brokaw & Edwards 1994). In addition, it draws on contemplative spirituality theory, which focuses on a developing awareness of God in the midst of daily life.

The initial article reported indicators of reliability and factorial and convergent validity (Hall & Edwards, 1996), while a second development article reported several scale revisions, incremental validity beyond intrinsic and extrinsic religious orientation and spiritual well-being, and further evidence for convergent and discriminant validity (Hall & Edwards, 2002). Since its initial development in 1996, conservative estimates suggest that the SAI has been used in over 100 empirical studies and has contributed to a growing relational paradigm for spiritual development.

The SAI has been used in dozens of published studies and numerous dissertations across multiple disciplines, including psychology, theology, health, education, anthropology, and business. Studies using the SAI have investigated a wide range of topics, which have shown that the SAI is associated in theoretically predicted ways with relational maturity (e.g., Hall et al., 1998; Sandage & Jankowski, 2010), psychopathology (Nordick, 2000), cross-cultural adjustment (Hall et al., 2006) and psychological adjustment (Seatter, 2001). In addition, researchers have developed profile patterns (Atkinson, 2007), and found theoretically expected longitudinal trends (Williamson & Sandage, 2009). In general, the breadth of studies using the SAI offers support for its internal and external validity, as it has generally correlated with other constructs according to theoretical expectations.

Despite its contributions, however, it became apparent over time that a broader measure than the SAI was needed to measure RS for two interrelated reasons. First, relational theories have continued to develop, particularly attachment theory and its application to people's emotional experiences of God. Second, while the original intention of the SAI was to be useful in clinical and pastoral contexts to assess and facilitate spiritual development, advances in a relational model of spiritual development have suggested the need for a broader measure to accomplish this purpose.

Development of the STI

Initial STI Scale Structure (1.0)

Building on the work of the SAI, the relational spirituality theory presented above, and an empirical exploration of the factor structure of a broad range of RS measures, Hall (2003) developed the Spiritual Transformation Inventory 1.0 (STI). The organizing framework was comprised of five broad dimensions, including an attachment dimension that was further separated into three more specific attachment classifications or "filters." This

resulted in seven second-order factors or domains. While the domains were not a one-to-one map of the five central organizing principles outlined in Hall's (2004) paradigm, the STI 1.0 was constructed to tap into these principles at multiple levels across the domains. The STI 1.0 domains were: Connecting to God, Knowing God, Attachment Filters (Secure, Preoccupied, Dismissing), Spiritual Tipping Points, and Relational Structure. The final structure of the STI 1.0 was comprised of 22 first-order subscales (factors) grouped within seven second order factors.

Extensive research on the STI 1.0 conducted by Hall and Sarazin (2011a, 2011b) led to numerous revisions of the initial STI 1.0. Overall, the research supported the theoretical foundation and psychometric properties of the final version of the STI 1.0. All the subscales except for one (Dismissing God Attachment) had adequate internal consistency (alpha) coefficients above .70, with 12 of the scales being .80 or higher. In general, the EFA results generally supported the expectation that the STI subscales would manifest simple structure. CFA analyses confirmed that a single-factor model for the subscales were a good approximation of the data. Finally, correlations between the STI subscales and 23 other measures supported the convergent validity for the STI subscales, with a majority of the more than 400 correlations being significant in the predicted direction.

Current Version of the STI (2.0)

The STI 1.0 was used from 2003 until the Fall, 2011. It was determined that a more clear organizing framework would be beneficial for interpreting group and individual reports. In addition, several new scales were added. The underlying theoretical basis for the STI 2.0 remains that of relational spirituality as described above; however, the organizing framework for the domains and scales was revised to reflect five major domains of relational connection. The new framework, called "The Connected Life," is described in the next section, including the subscales (first order factors) that are grouped into each of the five domains of The Connected Life model.

Three scales (Realistic Acceptance, Instability, and Disappointment) were collapsed into attachment to God scales (secure for RA and Anxious for the latter two scales). In addition, fourteen new scales were added to the STI 2.0, taking the inventory from 22 scales in the 1.0 version to 33 scales in the 2.0 version. Five new scales were added to the Connecting to Self & Others Domain (Spiritual Self-Awareness, Owning Your Faith, Secure Connection with Others, Anxious Connection with Others, Distant Connection with Others); three new scales were added to the Connecting to Spiritual Community Domain (Secure Connection w/ Community, Anxious Connection w/ Community, Distant Connection w/ Community); three new scales were added to the Connecting through Spiritual Practices domain (positive spiritual coping, negative spiritual coping, use of media); and three new scales were added to the Connecting to God's Kingdom domain (Service to the Local Church, Service Outside the Local Church, Evangelism). In addition, for the current version, all 33 scales were cut down from approximately 10-12 items per scale to 5 items to shorten the length of the STI, while still retaining robust reliability. Items were selected based on factor analysis results and item content considerations.

In addition to the main scales, items were developed to assess school and church programs.

Participants rate both importance and impact on 24 spiritual programs, and 24 spiritual outcomes. Aggregate results from these items are factored into the group report, but not the individual report.

Overview of The Connected Life Model of the STI

The STI 2.0 is based on Hall's relational spirituality theory described above, that explains the process of spiritual growth through relational connections (see articles on SpiritualTransformation.org, and Coe and Hall's (2010) book *Psychology in the Spirit*, for more details). Individuals live these principles out in five interrelated domains of relational connection that shape our spiritual development. The Connected Life model provides a holistic view of the domains that contribute to spiritual growth throughout a person's lifetime.

The 33 scales of the STI are organized around the five domains of connection in The Connected Life to help people organize and summarize information about their spiritual development. The five domains and scales for each domain are listed below.

Connecting to Self & Others

- Forgiveness
- Agape Love
- Spiritual Self-Awareness
- Owning Your Faith
- Secure Connection to Others
- Anxious Connection to Others
- Distant Connection to Others

Connecting to God

- Awareness of God
- Intimacy with God
- Experiencing God in Spiritual Practices
- Experiencing God in Prayer
- Gratitude
- Secure Connection to God
- Anxious Connection to God
- Distant Connection to God

Connecting to Spiritual Community

- Spiritual Friendship
- Spiritual Community Involvement
- Secure Connection to Community
- Anxious Connection to Community
- Distant Connection to Community

Connecting to Spiritual Practices

- Christ-centeredness
- Spiritual Practices Frequency

- Prayer Frequency
- Transformational Suffering
- Positive Spiritual Coping
- Negative Spiritual Coping
- Spiritual Openness
- Use of media

Connecting to God's Kingdom

- Spiritual Perspective
- Spiritual Meaning
- Service to the Local Church
- Service Outside the Local Church
- Evangelism

Reliability

The reliability of a scale score is an estimate of its stability, or that part of the score that is not due to random error. There are two main types of reliability: internal consistency and test-retest reliability. Internal consistency is the most common type of reliability used and we report on this below.

Internal consistency is typically evaluated using Cronbach's alpha. Cronbach's alpha measures the extent to which all the variables on a scale are positively associated with each other. It is an adjustment to the average correlation between every item and every other item. The alpha is also the average split-half reliability coefficient for all possible splits. A split half reliability is found by randomly selecting half of the items in a scale, computing the mean to create a composite variable, and then creating a composite variable of the remaining half, and correlating the two composite variables. The expected value for the random split-half reliability is alpha. Nunnally (1978) offered a rule of thumb of 0.70 as the cutoff for "acceptable" internal consistency, as shown below. By definition, scales with fewer items will have lower alphas.

Table 1. Alpha Categories

Cronbach's alpha (α)	Internal consistency
.90 to .99	Excellent
.80 to .89	Good
.70 to .79	Acceptable
.60 to .69	Questionable
.50 to .59	Poor
Below .50	Unacceptable

Table 2 below reports the alpha coefficients ranges for 32 scales based on approximately 1200 participants. All alphas were in the acceptable range, and most were in the good to excellent range. The mean alpha for the first order scales was .87, with a range of .75 to .94. This indicates an overall high degree of internal consistency according to the standard established by Nunnally (1978). (See Appendix 1 for information on the initial validation sample, and Appendix 2 for a summary of all psychometric information on domains and scales).

Table 2. Alpha Ranges for STI Scales

STI - NATIONAL VALIDATION STUDY	
Alpha Range	No. of Scales in this Range
.70 to .79	3
.80 to .89	17
.90 to .99	11
Mean alpha of 31 scales	0.87

Note: Use of media and Owing faith scales were developed after the national study and thus not represented in this report.

Validity

The validity of an assessment provides an indication of the degree to which it measures the construct it is intended to measure. There are several types of validity. This report addresses content validity, and three aspects of construct validity: factorial validity, convergent validity, and known groups validity.

Content Validity

Content validity refers to the degree to which an instrument adequately covers the content domain of the construct. As part of a four-year longitudinal study, Hall and colleagues conducted a thorough literature review of spirituality constructs and measures (Hall, Edwards & Wang, 2015). Approximately 40 scales were identified and used in this study. These scales were factor analyzed to identify the underlying dimensions for these scales. This information was synthesized with Hall's (2004) relational spirituality theory to develop the original 22 content areas for the STI. Over time, the content areas were expanded through in-depth interviews with college students (Bailey, Jones, Hall, Wang, McMartin, & Fujikawa, in press), and Christian college administrators. The extensive literature review, empirical analysis of underlying dimensions, and extensive interviews on which the STI content domains are based provide strong support that the 33 STI scales cover the content domain of relational spiritual development well.

Construct: Factorial Validity

Construct validity is a broad term that refers to various indicators that a scale measures what it is intended to measure. There are several aspects to construct validity. Generally the first aspect of construct validity to be addressed is known as factorial validity. This is evaluated through a statistical procedure known as factor analysis. Factor analysis provides an indication of the degree to which the items on a scale “hang together” and measure one, unified construct.

Exploratory factor analyses (EFA) were conducted on each of the 33 scales, separately, and on each domain separately. All 33 scales formed a single factor, indicating the items hang together well. All factor solutions resulted in only one eigenvalue greater than one, except for two second-order factors (domains). For these, the scree plot suggested that a one-factor solution is a good fit to the data, and all scales loaded onto a single factor.

All factor loadings (a statistic produced for each item that provides an indication of how well the underlying construct predicts the variance of that item) were above .30 (the conventional cutoff for an acceptable factor loading). In fact, the average factor loading for all items was .75. These results provide strong support for the factorial validity of the STI. They indicate that all 33 scales measure a unified construct and that the items for each scale all measure the same thing. Appendix 2 summarizes the psychometric properties for the current version.

Construct: Convergent Validity

Convergent validity is exhibited when a measure correlates with other measures in theoretically predicted ways. For example, we would expect a measure of subjective well being (social scientists’ term for happiness) to correlate positively with a measure of self-esteem. People with high self-esteem generally experience more positive moods. If two such measures correlated negatively or not at all, that would suggest at least one of the measures is not measuring what it is supposed to measure.

Correlations among domains. As a first high-level examination of convergent validity, correlations among the domains or second order factors were computed. Based on the underlying theory of relational spirituality, the five domains of *The Connected Life* are viewed as being highly interrelated. Hence, it was expected that the five domains would correlate significantly in a positive direction. Appendix 3 reports the zero-order and partial correlations (controlling for impression management) among the five domains. All ten zero-order correlations were significant at the .01 level in the positive direction with a range of .57 - .80, and a mean correlation of .68, supporting the convergent validity of the domains. In addition, values for the partial correlations controlling for impression management are only slightly lower than the corresponding zero-order correlations. The drop in value ranged from .02 to .04, with a mean drop of .03. This indicates that the correlations among the domains are not simply a function of impression management; rather, they represent predicted overlap among the conceptual substance of the five domains.

These correlations represent large effect sizes, or strength of association (Cohen & Cohen, 1983), accounting for an average of 45% of the variance, and provide strong empirical support for the overall conceptual model of *The Connected Life*. The five domains do indeed appear to be distinct, yet highly related facets of spiritual development.

Correlations with spiritual outcomes. In order to further examine the convergent validity of the first-order scales, they were correlated with a range of spiritual outcomes. The first set included four independent indicators of spiritual growth and maturity that were included in the spiritual profile section of the STI: having a personally important relationship with Jesus Christ; desiring one's relationship with Christ to be central; viewing loving God and others as the central purpose in life; and the fruit of the Spirit being more evident now than one year ago. It was predicted that all the positively oriented scales would correlate positively, and negative scales negatively, with the four indicators of spiritual maturity/growth.

All 124 correlations were in the predicted direction and significant. The correlations of the domains with the spiritual maturity/growth indicators summarize the scale data, providing the "big picture." The mean of the correlations of each spiritual maturity/growth indicator with all five STI domains ranged from .32 to .38. It is also noteworthy that the number of STI domains in which a person is thriving (defined as top 25%; a participant can thrive in 0 to 5 domains) correlated positively with all four indicators. As people thrive in more domains of the connected life, they generally report a higher level of commitment to their faith. Thus, overall the STI scales correlate moderately, as predicted, with self-reported, global indicators of spiritual maturity and growth over time.

Correlations with spiritual well-being indicators. The next set of spiritual outcomes against which the STI scales were validated included three independent indicators of spiritual well being that were included in the spiritual profile section of the STI: current rate of spiritual growth, satisfaction of current rate of spiritual growth, and satisfaction with spiritual life as a whole. It was predicted that all the positively oriented scales would correlate positively, and negative scales negatively, with the three indicators of spiritual well being.

All 93 correlations were in the predicted direction and significant. The mean of the correlations of each spiritual well being indicator with all five STI domains ranged from .40 to .46. It is also noteworthy that the number of STI domains in which a person is thriving (defined as top 25%; a participant can thrive in 0 to 5 domains) correlated positively with all four indicators. As people thrive in more domains of the connected life, they generally report a higher level of spiritual well being. Thus, overall the STI scales correlated moderately, as predicted, with self-report indicators of spiritual well being.

Correlations with Fetzer Spirituality Scales. STI scales were correlated with the Fetzer Spirituality measure (Fetzer Institute, 2003) in order to demonstrate convergence with an independent measure of spirituality. Factor analysis of the Fetzer measure yielded five scales we labeled: Spiritual well being, forgiveness, private spiritual practices, congregational support, and congregational demand. The general hypothesis was that

higher levels of spiritual development on the STI would correlate positively with four of the Fetzer scales (spiritual well being, forgiveness, private spiritual practices) and negatively with Congregational Demand. As table 3 below shows, the five STI domains correlated significantly in the predicted direction with four of the five Fetzer scales. The congregational demand scale only correlated with one of the STI domains—Connecting to God’s Kingdom. Contrary to the prediction, this was a positive correlation. This low positive correlation does, however, make sense in that people who are highly involved in service tend to experience more demands from their congregation. The vast majority of STI scales also correlated in the predicted direction with all five Fetzer scales. Overall, the correlations strongly support the validity of the STI as it correlates in the predicted directions with an independent measure of spirituality. In particular, the STI Forgiveness scale correlated higher with the Fetzer Forgiveness scale (.48) than with the other Fetzer scales (-.11 to .38). Likewise, the STI Spiritual Practices Frequency scale correlated higher with the Fetzer Private Spiritual Practices scale (.69) than with the other Fetzer scales (.12 to .60). Thus, the STI scales that have content that overlaps in specific ways with the Fetzer measure show that they discriminate that particular facet of spirituality from other general spiritual constructs.

Table 3. Correlations with Fetzer Spirituality Scales

	Fetzer Current Spir. Well Being	Fetzer Forgiveness	Fetzer Private Spir Practices	Fetzer Congregational Support	Fetzer Congregational Demand
Range of correlations across five STI domains	.49 - .76	.41 - .55	.38 - .66	.25 - .41	.00 - .23
Mean correlation with five STI domains	0.618	0.489	0.506	0.301	0.026

Correlations with Religious Coping & Commitment. STI scales were correlated with the Brief R-Cope measure of religious coping using its Positive and Negative Religious Coping scales, and with the Religious Commitment Inventory (RCI-10; Worthington et al., 2003). The theoretical expectation was that higher levels of spiritual health overall on the STI would correlate positively with positive religious coping and religious commitment, and negatively with negative religious coping. As Table 4 below shows, all five STI domains and scales correlated significantly and in the predicted direction with the religious coping and religious commitment. The STI domains correlated positively with positive religious coping at .53 on average, negatively with negative religious coping at -.49 on average, and positively with religious commitment at .58 on average. These moderate to high correlations demonstrating strong convergent validity for the STI. Moreover, the STI scales that specifically overlap with these three constructs correlate particularly highly with them. Christ-centeredness, which assesses degree of commitment to one’s faith, correlates .66 with the RCI-10. The STI Positive Spiritual Coping scale correlates .67 with the Brief R-

Cope Positive Religious Coping scale. The STI Negative Spiritual Coping scale correlates .70 with the Brief R-Cope Negative Religious Coping scale. These correlations indicate that as people report higher levels of spiritual health in their connection to self and others, God, spiritual community, spiritual practices, and God's Kingdom, they tend to use their faith in more positive ways to cope with difficulties, and they tend to maintain a stronger commitment to their religious faith.

Table 4. Correlations with Brief R-COPE and RCI

	Pos Religious Coping (Brief R-COPE)	Neg Religious Coping (Brief R-COPE)	Religious Commitment (RCI-10)
Range of correlations across five STI domains	.44 - .63	-.27 to -.51	.51 - .66
Mean correlation with five STI domains	0.53	-0.49	0.58

Correlations with God and Human Attachment. STI scales were correlated with independent measures of God attachment (AGI; Beck & McDonald, 2004) and human attachment (ECR, Brennan, Clark, & Shaver, 1998). The theoretical prediction is that spiritual health on the STI will correlate positively with secure God and human attachment and negatively with insecure God and human attachment. As Table 5 shows, the five STI domains correlated moderately in the predicted direction with the three attachment to God scales and three human attachment scales. (Note that the negatively oriented attachment scales on the STI were reverse scored before aggregating as part of their respective domain score, so for all STI domains, a higher score indicates greater spiritual health). It is also noteworthy that the STI correlated slightly higher overall with the God attachment scales than with the human attachment scales, which makes theoretical sense. These correlations indicate that, as expected, people who report higher levels of spiritual health on the STI tend to experience more secure attachment to God and other humans in their life. This provides strong convergent validity for the STI.

Table 5. Correlations with God and Human Attachment

	Secure God Attachment (AGI)	Dismissing God Attachment (AGI)	Anxious God Attachment (AGI)	Secure Human Attachment (ECR)	Dismissing Human Attachment (ECR)	Anxious Human Attachment (ECR)
Range of correlations across five STI domains	.42 - .65	-.37 to -.56	-.31 to -.49	.34 - .49	-.27 to -.52	-.30 to -.46
Mean correlation with five STI domains	0.546	-0.478	-0.436	0.392	-0.376	-0.371

Correlations with Satisfaction with Life & Positive/Negative Affect. STI scales were correlated with the Satisfaction with Life Scale (SWLS; Diener et al., 1985) and the Positive and Negative Affect Schedule-Expanded Version (PANAS-X; Watson & Clark, 1994). It was predicted that higher levels of spiritual health on the STI would correlate positively with satisfaction with life and positive affect, and negatively with negative affect. As Table 6 shows, the STI domains correlated moderately in the predicted direction with all three scales. The STI scales exhibited this same pattern. The mean correlation of all five STI domains with the other scales ranged from .32 to .46. Thus, people who report higher levels of spiritual development on the STI tend to experience higher levels of satisfaction with life, more positive affect, and less negative affect. This provides strong support for the convergent validity of the STI.

Table 6. Correlations with Satisfaction with Life & Positive/Negative Affect

	Satisfaction with Life (SWLS)	Positive Affect (PANAS)	Negative Affect (PANAS)
Range of correlations across five STI domains	.27 - .38	.42 - .50	-.24 to -.44
Mean correlation with five STI domains	0.324	0.467	-0.364

Correlations with Psychological Well Being. STI scales were correlated with the Psychological Well Being Scales (PWBS; Ryff & Keyes, 1995) to assess the association between spiritual health on the STI and general psychological well being as measured on six scales: autonomy, environmental mastery, personal growth, positive relations with

others, purpose in life, and self-acceptance. It was predicted that higher levels of spiritual health on the STI would correlate positively with all six indicators of psychological well being. As shown in Table 7, the five STI scales correlated moderately and positively, as predicted, with all six psychological well being scales. The mean correlation (averaging across all five STI domains) ranged from .25 to .54. It also noteworthy that the Positive Relations with Others scale correlated most highly with the STI Connecting to Self and Others and Connecting to Spiritual Community domains (.67 and .62, respectively), which makes theoretical sense since these two domains focus the most on personal relationships. These correlations indicate that people reporting higher levels of spiritual health on the STI tend to experience higher overall levels of psychological well being. This supports the relational spirituality theory undergirding the STI, which posits that psychological and spiritual functioning are intricately intertwined. Overall, these correlations lend strong support to the convergent validity of the STI.

Table 7. Correlations with Psychological Well Being

	Autonomy (SPWB)	Environmental Mastery (SPWB)	Personal Growth (SPWB)	Positive Relations with Others (SPWB)	Purpose in Life (SPWB)	Self Acceptance (SPWB)
Range of correlations across five STI domains	.28 - .37	.31 - .43	.40 - .61	.33 - .67	.11 - .34	.39 - .61
Mean correlation with five STI domains	0.327	0.392	0.538	0.481	0.249	0.510

Construct Validity: Known Groups

Known groups validity is demonstrated when a scale predicts groups known, through an independent method, to differ on the scale's construct. A known groups analysis of the Spiritual Transformation Inventory (STI) was conducted to assess the degree to which certain hypothesized subscales of the STI were able to differentiate between individuals known to differ with respect to their degree of spiritual health across five domains of spiritual functioning, using an independent coding method (Moradshahi, 2015). This analysis involved the use of two different methods of assessing spiritual health. Self-report data was obtained using the STI. Third-party, narrative-based clinical assessment was obtained using the Spiritual Narrative Analysis (SNA), a coding system of open ended questions that was developed in this study. The SNA exhibited evidence of good inter-rater reliability and validity. The use of two different methods of assessment was thought to account for common method variance that occurs when the same method is used.

The “known” groups were developed using SNA scores from each of the five SNA subscales. The “spiritually healthy” group was comprised of individuals whose SNA scores on a particular subscale were between 3.5 and 5.0. The “spiritually unhealthy” group was comprised of individuals whose SNA scores on the same subscale were between 1.0 and 2.49. Because there are five different SNA subscales, there were five sets of “known groups.” The sets consisted of those who were considered spiritually healthy and those considered spiritually unhealthy with respect to each of the SNA subscales (Ownership, Community, Struggles, Secure Attachment, and God Image). Across the 30 STI scales included in this study, and five SNA subscales, 61 hypotheses were proposed. For example, we hypothesized that the spiritual healthy group on the SNA Ownership of faith scale would score significantly higher than the unhealthy group (those scoring low on Ownership) on the STI Awareness of God scale. Many of the hypotheses were supported as shown below. The list below shows all the STI scales that exhibited statistically significant differences (in the predicted direction) between the spiritually healthy and unhealthy groups (high and low scoring) on each of the five SNA subscales (a Bonferroni correction was used to control for Type I error).

Ownership of Faith

- Awareness of God
- Intimacy with God
- Spiritual Friendship
- Christ Centeredness

Community

- Spiritual Community Involvement
- Secure Connection to Others
- Anxious Connection to Others
- Distant Connection to Others
- Spiritual Meaning

Struggles

- Secure Connection to Others
- Distant Connection to Others
- Secure Connection to Community
- Distant Connection to Community
- Christ Centeredness

Secure Attachment

- No significant differences

God Image

- Awareness of God
- Experiencing God in Spiritual Practices
- Experiencing God in Prayer
- Intimacy with God
- Distant Connection to God
- Christ Centeredness
- Spiritual Perspective

In sum, known groups analysis of the STI revealed significant group differences in all domains of spiritual functioning tested by the SNA except for Secure Attachment. In the four SNA subscales, a total of 18 significant results were found, with another three approaching significance. Given that the SNA scores are not self-report and represent an independent method and measure of spiritual health, these results provide strong support for the validity of the STI.

Scoring and Administration

The STI scales use a 6-point likert scale ranging from 1 – Very untrue of me to 6 – Very true of me. Scale scores are the mean score for the items that comprise that scale. Domain scores are computed by taking the mean of the scales that represent that domain. Scale scores are then converted to percentile ranks scores at the individual level (for individual reports) and group level (for group reports). This is done by calculating a Z-score based on national norms, and then converting this to a percentile rank.

The STI is administered online using the Qualtrics survey platform. For groups, participant emails are uploaded to create a panel in the Qualtrics system, and email invitations are sent through the Qualtrics platform. These email invitations have a unique link for participants to take the STI. For those registered to get an individual report, the individual reports are emailed to them immediately upon completion of the STI. Group reports are generated after data are collected.

Individual Report

The individual report is designed to give participants a clear picture of their spiritual health, and concrete steps they can take right now to grow in their relationship with God. Some participants take the STI on their own, while others take it in the context of a spiritual formation class or church small group. Either way, individuals are encouraged to work through the curriculum provided in the report in conversation with God and spiritual community.

The report starts out by providing scores on the five domains of The Connected Life. This is a high-level overview of their spiritual health. The next section provides a personalized 6-

week growth plan. This plan identifies an individual's top three areas (best scores) and bottom three areas (worst scores), which represent growth areas. Soul projects are provided for these areas, as well as for all other scales and individuals are encouraged to do one soul project per week for the next six weeks. The soul projects ask individuals to prayerfully reflect on their score, and a series of reflective questions. It then asks them to meditate on a Scripture passage related to that scale area, write out their experiences of doing the soul project, and then provides a week-long spiritual challenge. The individual report also provides mean and percentile rank scores on all 33 scales, as well as feedback and soul projects on all 33 scales.

These exercises help people connect more deeply with God and others, and provide concrete next steps. For example, STI soul projects help people to 1) gain insight into their experiences of God; 2) identify emotional barriers to intimacy with God and spiritual community; 3) understand their patterns of spiritual practices; and 4) take steps to engage more deeply in spiritual practices and spiritual community.

The STI individual report provides a springboard for discussion with friends, spiritual mentors/advisors, pastors and professors to facilitate self-awareness and spiritual development. STI results are viewed as a beginning understanding of one's core spiritual development to be fleshed out in self-reflection, new practices, and dialogue with mentors and spiritual community. The STI is also commonly used to complement other assessments in the personality and personal development domain. Feedback about spiritual strengths and growth areas can be the basis for further interventions that help individuals activate their faith in new ways.

In addition, the STI individual report can be used for leadership and team development. The individual report can be one part of an overall leadership development process for spiritual leaders. This ensures that the spiritual foundations of effective leadership are directly addressed. In team development, team members are encouraged to share their overall experience of their results and soul projects, which help them to gain a deeper understanding of their co-workers' spiritual journeys.

Group Report

The group report is designed to provide actionable results for spiritual formation leaders. Group reports help leaders improve programs based on evidence from their spiritual assessment processes. In addition, group reports help leaders report their assessment efforts to their accrediting agencies and constituents.

The STI group report provides leaders a snapshot of where their people are in their spiritual journey. The group report covers 33 areas of spiritual life organized around The Connected Life, the importance and impact of 24 key programs, and the importance and impact of 24 specific spiritual outcomes.

The group report and The Connected Life model can foster a common language and way to

think about the spiritual development. This can create important conversations among spiritual leaders as they think through their spiritual formation efforts. The Connected Life model can also serve as an organizing framework for spiritual formation programs, which can then be tied directly to the STI results. This can assist with students' and congregants' spiritual growth process. In addition, in the school context, it can assist with demonstrating to accrediting agencies that schools are intentionally assessing spiritual development and using that information to improve spiritual programs.

Conclusion

The STI was developed to meet the need for a spiritual assessment tool that combines theoretical depth, scientific rigor, practical utility, and national benchmark norms. The STI offers a group report for colleges, churches and Christian ministries, and an individual report to help people grow in their spiritual journey. Over the past decade, over 25,000 people have taken the STI, and the benchmark norms grow on a daily basis, providing increasingly robust scores.

The STI is currently being used in the areas of individual spiritual development, leadership development, and assessment of spiritual formation programs by colleges, universities and faith-based non-profits. For these purposes, it has adequate reliability (internal consistency) and validity.

The STI individual report has been used to facilitate the spiritual development of individuals in numerous roles including: junior high, high school and college students, teachers, professors, administrators, leaders, pastors, and missionaries. STI research continues to expand the research base on validity and applied uses.

Appendix 1

Initial Validation Sample for STI 2.0 – Fall, 2011

Survey Methodology

All the data were collected during the Fall semester of 2011. The research was approved by the Protection of Human Rights in Research Committee (PHRRC) at Biola University under the direction of the developer of the STI 2.0, Todd W. Hall, Ph.D. The data were collected online using the Teametrics web system, which uses industry standard SSL encryption. Data from each institution were downloaded and combined into an aggregated data file and then analyzed using SPSS and STATA.

Institutions participated in the project as part of their institutional assessment efforts in order to evaluate the overall spiritual state of their students. Several institutions also purchased individual reports for their students. The project director from each institution was responsible to email the self-invite link to his/her students and to send out reminder emails. Students were generally given a window of several weeks during which they were to take the STI 2.0 online. A generic consent form was provided to each project director, who then revised it to include information for a local contact person, and any instructions specific to the institution.

Data Collection

The initial validation sample for the STI 2.0 consisted of a national sample from 12 Christian colleges and seminaries in various regions of the U.S and Canada. Ten of the schools were from the US, and two were from Canada. As shown in Table A1.1 below, of the US schools, the majority (60%) was from the West, three-tenths was from the South, and one-tenth was from the Midwest. Compared to the Pew nationally representative data of Evangelicals, the STI sample substantially over-represents the West (by a factor of 3.5), and under-represents the South (factor of .6), Midwest (factor of .43), and Northeast (factor of 10).¹ Three of the 12 institutions were seminaries in which graduate students participated. The remaining nine institutions were colleges or universities in which undergraduate students participated.

¹ The Pew US Religious Landscape Survey (<http://religions.pewforum.org/>) conducted in 2007 provides the most nationally representative sample of various religious groups. Given that the STI 2.0 was developed within the framework of the conservative Protestant tradition (or Evangelical tradition, broadly considered), data from all the Evangelical traditions combined are used here as a comparison to the STI sample demographics. This provides a benchmark comparison for how representative the STI sample is of US Evangelicals as a whole.

Table A1.1. US Region of Institutions (Individuals for Pew)			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9472)
	Frequency	Percent	Percent
West	6	60.0	17.0
South	3	30.0	50.0
Midwest	1	10.0	23.0
Northeast	0	0.0	10.0
Total	10	100.0	100.0
Mode		West	South

Summary of Participants

In the section below, details are reported on the demographics and spiritual profile of the participants. In this section, the characteristics of the sample are briefly summarized. The sample overall was fairly evenly divided among males and females, just under two-thirds European American. Just over eight-tenths of participants were in the Emerging Adult age range (18-29). Three-quarters of the sample was single/never married, and just over two-tenths was married (22.6%). Approximately four-tenths of the sample completed some college, while one-quarter completed high school, and one-quarter completed an undergraduate degree. Sixty-two percent of the sample had at least completed some college or higher, while approximately one-third of the sample had an undergraduate degree or higher. Nearly seven-tenths (68.9%) of participants were enrolled in undergraduate studies, and just over three tenths (31.1%) were enrolled in graduate studies. For both school levels, approximately two-thirds of participants were in their first year of study (64.7% and 69.6%, respectively). The sample was almost exclusively self-identified born again Christian, with the largest tradition being Evangelical Protestant (75.9%). Two-thirds of the sample identified as non-denominational, Evangelical Methodist, or Baptist. In terms of religious involvement, the sample as a whole was highly involved. Almost all participants (97.4%) attended church, with 86% attending once per week or more. Approximately half of the participants reported being involved in church-sponsored small groups, and ministry to people inside and outside their local church.

Participant Demographics

The total sample was comprised of 1317 participants. The age range was 18 to 70 with a mean age of 24.53. The percentages in four age groups are shown below in Table A1.2, along with comparisons to the Pew Evangelical sample. As the table indicates, the STI sample is more heavily weighted toward the Emerging Adult age group (18-29) (by a factor of 4.78), most likely due to the fact that the STI sample was comprised of all college and graduate students.

Given that developmental stages interact with spiritual development, descriptive statistics, such as means and standard deviations used for benchmarking individuals' scores, will be identified for each age group below.

The purpose of the present study was to provide evidence for the reliability and validity of the STI 2.0 broadly across age groups. The present sample appears to provide a sufficient age range (beyond the traditional college ages) to suggest that the reliability and validity findings are generalizable to the Emerging Adult (18-29) age range and possibly the Young-Mid Adult (30-49). However, given the small percentages in the 50-64 and 65+ age ranges, further research is needed to confirm that the general findings are applicable to these age ranges. This caveat notwithstanding, there is no theoretical reason to assume that the STI items and scales would not hang together, and relate to each other in theoretically meaningful ways, in these older age groups.

Table A1.2. Age			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9281)
	Frequency	Percent	Percent
18-29	1071	81.3	17.0
30-49	182	13.8	39.0
50-64	61	4.6	26.0
65+	3	0.2	19.0
Total	1317	100	100
Mean (Estimate for Pew)		24.53	Not Available
Mode		18-29	30-49

As Tables A1.3 and A1.4 below show, the sample was slightly over half male. This is very similar to the national Pew sample; however, Pew sample was slightly over half female. The sample was just under two-thirds European American. Small percentages of Asian American/Pacific Islander (6.7%), Latino/a (4.6%), and African American/Black (4.2%) groups were also represented. Compared to the Pew sample, this slightly under-represents European Americans (by a factor of 1.28), African American/Blacks (factor of 1.43), and Latino/as (or Hispanics) (factor of 1.52), and over-represents Asian American/Pacific Islanders (by a factor of 3.35), and Other (factor of 5). Overall, the diversity of the sample appears to be reasonably close to the nationally representative Pew data.

Table A1.3. Gender			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9472)
	Frequency	Percent	Percent
Male	652	52.1	47.0
Female	599	47.9	53.0
Total	1251	100	100

Table A1.4 Ethnicity			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9411)
	Frequency	Percent	Percent
European American	802	63.5	81.0
African American/Black	53	4.2	6.0
Latino/a	58	4.6	7.0
Asian American/Pacific Islander	85	6.7	2.0
Native American	13	1	Not available
Other	252	20	4 (Other/Mixed (non-Hispanic))
Total	1263	100	
Mode		European American	European American

As Table A1.5 below shows, slightly over half the sample was single and not involved in an exclusive dating relationship, while one-fifth was single and involved in an exclusive dating relationship. Combining these last two categories, exactly three-quarters of the sample were never married. Slightly over one-fifth of the sample was married. The remainder of the sample was separated (.2%), divorced (2%) or widowed (.2%).

Comparing this to the Pew data, the STI sample substantially over-represents the never married group (14% in the Pew sample), and under-represents the married group (59% in the Pew sample). This is likely due to the student nature of the STI sample.

Table A1.5. Relationship Status			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9419)
	Frequency	Percent	Percent
Never married/single & not involved in an exclusive relationship	712	54.2	N/A
Never married/single & involved in an exclusive relationship	273	20.8	N/A
Never married (above two categories combined)	985	75.0	14.0
Married	297	22.6	59.0
Separated	3	0.2	N/A
Divorced & not remarried	26	2	N/A
Divorced (not remarried) or separated		2.2	13.0
Widowed & not remarried	3	0.2	9.0
Living with partner	0	0	5.0
Total	1314	100	100.0
Mode		Never married	Married

As Table A1.6 below shows, the sample predominantly had some college education (40%), while one-quarter completed some high school, and one-quarter completed an undergraduate degree. Nearly three-quarters (73.1%) of the sample had some college or higher, while approximately one-third (32.8%) of the sample had an undergraduate degree or higher. Six percent had a master's degree and just over one percent had a doctoral degree.

Comparing this to the Pew sample, the STI sample is slightly more educated as a whole. The modal category for the STI sample is some college, whereas for the Pew sample it is completed high school. Whereas one-third had a college degree or higher in the STI sample, only one-fifth of the Pew sample had a college degree. This, again, is likely due to the student nature of the STI sample, which inherently over-represents more highly educated individuals as compared to the overall education level of Evangelicals in the U.S. This may affect the descriptive statistics (i.e., means and standard deviations) for benchmarking individuals, thus, the current STI data will need to be compared to a more representative sample of conservative Protestants/Evangelicals in future research. However, there is no theoretical reason to presume that these differences would substantially affect validity indicators and associations among variables on the STI.

Table A1.6. Education Level			
	STI 2.0 Development Sample		Pew US Religious Landscape Survey (2007)-All Evangelical Traditions (N = 9411)
	Frequency	Percent	Percent
Less than 12th grade	2	0.2	16.0
Completed high school	351	26.7	40.0
Some college	531	40.3	24.0
Undergraduate degree	337	25.6	13.0
Masters degree	79	6	N/A
Doctoral degree	16	1.2	N/A
Post-Graduate degree	95	7.2	7.0
Total	1316	100	100.0
Mode		Some college	Completed high school

The majority (59.2%) of the sample worked outside the home. Of those who worked outside the home, approximately three-quarters (75.6%) worked part-time, and one-quarter (24.4%) worked full-time. This reflects the nature of the sample being weighted toward undergraduate students.

In terms of the level and type of school participants attended, two-thirds (66.7%) attended a Christian four-year college/university and were enrolled in undergraduate studies. Just over three percent (3.2%) was enrolled in graduate studies at a seminary, and approximately one percent (1.3%) was enrolled in undergraduate studies at a Christian two-year college/Bible institute.

Tables A1.7 and A1.8 below report undergraduate and graduate class ranks. Of the undergraduate students, nearly one-third (64.7%) were freshman, fifteen percent were seniors and approximately one-tenth were each sophomores and juniors. Of the graduate students, 70% were first-year students and 17% were second year students. There were small percentages of students in their third through tenth year of graduate school.

Table A1.7. Undergraduate Class Rank		
	Frequency	Percent
Freshman	551	64.7
Sophomore	76	8.9
Junior	94	11
Senior	90	10.6
Senior +	41	4.8
Total	852	100

Table A1.8. Year of Graduate School		
	Frequency	Percent
1	268	69.6
2	67	17.4
3	27	7
4	11	2.9
5	3	0.8
6	2	0.5
7	4	1
8	1	0.3
9	1	0.3
10	1	0.3
Total	385	100

Participants' Spiritual Profile

The sample was comprised almost exclusively of participants who self-identified as Christian (99.7%) and as being born again (99%). Moreover, almost all participants (97.9%) responded moderately or very true to the statement, "I have a personal relationship with Jesus Christ that is an important part of my life." Thus, the sample was essentially Christian with a high level of religious salience.

In terms of broad Christian tradition, as Table A1.9 below shows, three-quarters (75.9%) of the sample identified as Evangelical Protestant, and 15% as Mainline Protestant. Less than five percent each identified as Historically Black Protestant, Catholic, or Orthodox Christian. Combining Evangelical Protestant and Historically Black Protestant groups, nearly eight-tenths of the sample can be broadly considered as conservative Protestant.

Table A1.9. Christian Tradition		
	Frequency	Percent
Evangelical Protestant	938	75.9
Historically Black Protestant	22	1.8
Mainline Protestant	186	15
Catholic Christian	28	2.3
Orthodox Christian	62	5
Total	1236	100

Table A1.10 reports denomination, or church affiliation, percentages. As can be seen, the largest groups were non-denominational, comprising just over one-third of the sample (34.9%), Evangelical Methodist (16.5%), and Baptist 15.1%). Together, these three denominations comprised two-thirds of the sample (66.5%). All other groups were less than 10%.

Table A1.10. Denomination		
	Frequency	Percent
Non-denominational	435	34.9
Methodist-Evangelical tradition	206	16.5
Baptist	188	15.1
Other	104	8.4
Pentecostal-Assemblies of God/Church of God/Other Pentecostal	73	5.9
Holiness-Christian & Missionary Alliance/Nazarene/Other Holiness	63	5.1
Evangelical Free	49	3.9
Presbyterian	33	2.7
Church of Christ/Christian Church/Disciples of Christ	31	2.5
Reformed	18	1.4
Mainline	12	1
Lutheran-Evangelical tradition	8	0.6
Anglican/Episcopal-Evangelical tradition	8	0.6
Anabaptist	8	0.6
Catholic	7	0.6
Greek Orthodox	1	0.1
Russian Orthodox	1	0.1
Total	1245	100

In terms of religious involvement, the sample as a whole was highly involved. Almost all participants (97.4%) attended church, with 86% attending once per week or more (see Table A1.11 below). In addition, just over four-tenths (43.3%) of participants indicated being involved in a church-sponsored small group. Over half the participants (57.1%) reported being involved in ministry to their local church, and just under half (47.2%) were involved in ministry to others outside their local church.

Table A1.11. Frequency of Worship Service Attendance		
	Frequency	Percent
1 = Never	12	1
2 = Once a month or less	33	2.6
3 = Several times per month	130	10.3
4 = Once per week	693	55.1
5 = Several times per week	355	28.2
6 = Daily	13	1
7 = More than once daily	21	1.7
Total	1257	100

**Appendix 2:
Summary of Psychometric Properties of STI Domains and Scales**

	Corr w/ Long Versio n	Factor (Pattern) Loading Range	Mean Factor Loadin g	Eigen- value	% Variance Accounte d for by Factor	Stand. Alpha	N for Alpha
CONNECTING THROUGH SPIRITUAL PRACTICES							
		.56 - .89	0.71	4.08	58.3		
Christ-centeredness	0.97	.79 - .83	0.82	3.67	73.2	0.91	1147
Spiritual Practices Frequency	0.95	.56 - .82	0.73	3.12	62.5	0.85	1280
Prayer Frequency	0.97	.70 - .81	0.76	3.29	65.8	0.87	1297
Transformational Trials	0.98	.80 - .92	0.87	4.02	80.4	0.94	1161
Positive Spiritual Coping	0.97	.77 - .86	0.81	3.26	72.5	0.91	1146
Negative Spiritual Coping	0.95	.76 - .87	0.83	3.73	74.7	0.91	1148
Spiritual Openness	0.89	.32 - .78	0.61	2.53	50.6	0.75	1162
CONNECTING TO GOD							
		.62 - .90	0.77	5.15	64.4		
Awareness of God	0.99	.81 - .85	0.83	3.76	75.2	0.92	1198
Intimacy with God	0.98	.72 - .93	0.82	3.72	74.4	0.91	1200
Experiencing God in Spiritual Practices	0.94	.60 - .81	0.72	3.06	61.2	0.83	1139
Experiencing God in Prayer	0.97	.72 - .85	0.78	3.41	68.1	0.88	1162
Gratitude	0.94	.68 - .84	0.77	3.36	67.2	0.88	1185
Secure Connection to God	0.95	.63 - .75	0.69	2.92	58.5	0.82	1240
Anxious Connection to God	0.95	.63 - .80	0.71	3.04	60.7	0.84	1253
Distant Connection to God	0.95	.69 - .81	0.72	3.09	61.9	0.85	1223
CONNECTING TO SELF & OTHERS							
		.52 - .68	0.62	2.91	48.4		
Forgiveness	0.96	.55 - .71	0.61	2.49	49.8	0.75	1171
Agape Love	0.95	.70 - .82	0.74	3.21	64.2	0.86	1174
Spiritual Self-Awareness	0.96	.47 - .75	0.66	2.74	54.8	0.79	1154
Secure Connection to Others	0.96	.58 - .78	0.73	3.11	62.2	0.85	1142
Anxious Connection to Others	0.96	.64 - .78	0.73	3.14	62.8	0.85	1152
Distant Connection to Others	0.94	.62 - .81	0.75	3.24	64.8	0.87	1137

Summary of Psychometric Properties of the STI 2.0 Standard Version for First and Second Order Factors (cont'd)							
	Corr w/ Long Versio n	Factor (Pattern) Loading Range	Mean Factor Loadin g	Eigen- value	% Variance Accounte d for by Factor	Stand. Alpha	N for Alpha
CONNECTING TO COMMUNITY		.48 - .82	0.70	2.96	59.3		
Spiritual Friendship	0.97	.78 - .87	0.82	3.68	73.7	0.91	1176
Spiritual Community Involvement	0.98	.79 - .85	0.82	3.67	73.3	0.91	1154
Secure Connection to Community	0.97	.68 - .81	0.75	3.26	65.1	0.87	1140
Anxious Connection to Community	0.97	.71 - .84	0.78	3.46	69.2	0.90	1151
Distant Connection to Community	0.97	.65 - .83	0.77	3.36	67.3	0.88	1136
CONNECTING TO GOD'S KINGDOM		.60 - .77	0.69	2.89	57.7		
Spiritual Perspective	0.96	.75 - .85	0.79	3.47	69.4	0.89	1177
Spiritual Meaning	0.94	.81 - .90	0.86	3.94	78.8	0.93	1132
Service to the Local Church	0.98	.70 - .90	0.84	3.82	76.4	0.92	1160
Service Outside the Local Church	0.97	.76 - .81	0.79	3.47	69.3	0.89	1181
Evangelism	0.97	.62 - .82	0.71	3.01	60.2	0.83	1206
Total No of Items	155						
EFA Summary							
Mean	0.96		0.75	3.34	65.66	0.87	1177
Range for Alphas						.75 - .94	
<p>Note on EFA. For all factor solutions, all items loaded onto a single factor. All factor solutions resulted in only one eigenvalue greater than one, except for two second order factors. For these, the scree plot suggested a one factor solution is a good fit to the data, and all scales loaded onto a single factor. Note. Standard Version contains 5 items for each subscale.</p>							

**Appendix 3:
Correlations Among Domains**

	Connecting through Spiritual Practices	Connecting to God	Connecting to Self & Others	Connecting to Community	Connecting to God's Kingdom
Connecting through Spiritual Practices	1	0.78**	0.644**	0.632**	0.703**
Connecting to God	.801**	1	0.627**	0.585**	0.683**
Connecting to Self & Others	.679**	.667**	1	0.731**	0.535**
Connecting to Community	.660**	.616**	.755**	1	0.575**
Connecting to God's Kingdom	.721**	.703**	.567**	.599**	1

Note: The zero-order correlations are below the diagonal and the partial correlations controlling for two IM subscales (denying minor flaws & acknowledging minor flaws) are above the diagonal. Items are from the Balanced Inventory of Desirable Responding, but subscales are derived from a factor analysis on the current data set.

** . Correlation is significant at the 0.01 level (1-tailed).

N = 1566. Mean Zero-Order Correlation = .68

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