Notes About Spirit Map

This paper provides background information about Spirit Map, including:

- What Spirit Map is – and is not.
- Similarity of Spirit Map's structure and methodology with that found in the social sciences and marketing research.
- Comparisons with other spiritual well-being inventories.
- Discussion of how we developed the 44 items in the Spirit Map inventory.
- The underlying domains of spiritual well-being revealed by analyzing-Spirit Map response data via an Exploratory Factor Analysis (EFA) and how these domains compare with domains of spiritual well-being reported in the literature.
- Validity and reliability issues.
- The distinction New York Times columnist David Brooks makes between resume virtues and eulogy virtues and how that distinction applies to Spirit Map (a slight but pertinent tangent).
- Results of a Confirmatory Factor Analysis (CFA) on Spirit Map data and comparison of those results with CFA's of two other validated instruments.
- Additional research results and future research possibilities that our Spirit Map database makes possible.

What Spirit Map Is and Is Not

Survey Structure

Spirit Map is a survey-based instrument and analysis procedure that provides a point-in-time snapshot of where individuals and congregations are on their spiritual journey, helping them find their inherent spiritual strengths and their opportunities to deepen their sense of peace, compassion, and joy.

The Spirit Map inventory contains 44 items related to the domain of spiritual well-being. Individuals assess both the presence of and the importance of each item in their spiritual life:

- Presence of each item: how true is this statement for you (1 – 10 scale where 1 = not at all true and 10 = totally true)
- Importance of each item: how important is this statement to your spiritual well-being (1 – 10 scale where 1 = relatively least important to your spiritual well-being and 10 = relatively most important to your spiritual well-being)?

In asking people to rate the importance of each item, Spirit Map is almost unique among surveys of this type. We have found only one other survey that asks for another rating in addition to the presence rating.

Spirit Map's importance rating allows people to define for themselves what matters in their spiritual life, bringing built-in motivation to the work of deepening their spiritual lives. For example, if someone gives the same presence rating to two Spirit Map items, the importance ratings assigned to the two items helps determine which item should receive the most attention. In this way the importance ratings serve as a prioritizing metric for action.

After individuals have provided their presence and importance ratings, our survey asks respondents to provide an estimate of their overall spiritual well-being both now and in five years (optional).

Key Deliverables

Spirit Map is not a predictive tool in the way that, for example, the SAT attempts to predict college success. It is also not a screening tool in the way that certain personality tests are used as part of an employment screening process. Instead, the survey methodology and analytical steps, both at the individual level and congregational level, follow generally accepted and well-established marketing research practice to give three primary deliverables:

- Top five Signature Strengths (SS) as they pertain to the individual's spiritual identity.
- Top five Key Opportunities (KO) as they pertain to the individual's spiritual growth and development. Appendix A explains how we determine Signature Strengths and Key Opportunities.
- A quadrant map where each of the 44 items that make up the survey, including the SS and KO, is plotted in the two-dimensional presence/importance space. Appendix B provides an example quadrant map.

Faith-Neutral Aspect

We developed Spirit Map as a faith-neutral inventory, believing that spirituality is a universal human experience that transcends specific beliefs. While there are items in the inventory that deal with spiritual issues, there is no direct reference, for example, to God, Creator, higher power, or prayer. While faith-neutrality is not a unique characteristic, it does place Spirit Map with a growing number of surveys with a spiritual rather than a religious orientation (Meezenbroek et al, 2012).

J. Fisher, author of another spiritual well-being inventory called SHALOM, has also noted the need to "relax" the reference to God in order to expand the relevance of his instrument to a broader audience. As he says in a recent paper "…in light of the claim of theistic bias leveled at the existing SHALOM, four of the five original Transcendental factor items had the words 'God', 'Divine', and 'Creator' replaced by the word 'Transcendent'" (Fisher, 2016, p. 49)

We also note this from Meezenbroek et al (2012) about the need for spiritual well-being surveys to be more faith neutral, "We looked for a definition of spirituality that reflects the experiences of people from different religious or secular backgrounds and that reflects current (western) culture, where many people are searching for profundity and meaning in life on the basis of personal experiences and insight instead of on the basis of external rules, norms and expectations. In current (western) culture, more and more people are searching for a connection with the divine within themselves, instead of a connection with an external almighty power." (p. 338)

Similarities with Social Science and Marketing Research

Similarities with Social Science Research

The scales used in Spirit Map for the Presence and the Importance ratings are similar to Likert scales commonly used in survey research in the social sciences.

Spirit Map's question asking individuals to provide an estimate of their overall spiritual well-being both now and in five years also has parallels in the social sciences. Here's how Spirit Map asks the questions:

Taking the items above as speaking, in aggregate, to your overall level of spiritual well-being, plus any other items we may have missed and recognizing that some items will be more important to you than others: How would you rate your current level of overall spiritual well-being? (1 – 10)? Where do you expect your overall level of spiritual well-being to be five years from now? (1 – 10)?

Social science assessments regularly use a self-defined, self-reported subjective overall assessment for constructs that are difficult to define objectively, leaving the construct's definition up to the individual respondent.

For example, Ed Diener from the University of Illinois, Urbana-Champaign in his Satisfaction with Life Scale questionnaire says, "The Satisfaction with Life Scale was developed to assess satisfaction with people's lives as a whole. The scale does not assess satisfaction with specific life domains, such as health or finances, but allows subjects to integrate and weigh these domains in whatever way they choose."

In social science research, overall constructs are often characterized by specific domains or attributes in this way. Job satisfaction surveys are another example of such a structure. In addition to an overall, self-defined, subjective rating of job satisfaction, such surveys usually include ratings of specific attributes such as salary, advancement opportunities, benefits, professional development opportunities, supervision, etc. As in the case of overall life satisfaction cited above, the overall rating of job satisfaction allows subjects to integrate and weigh these specific domains or attributes in whatever way they choose to reflect the overall rating.

In the same way that overall satisfaction with one's life or job is a function of the bundle of attributes that define the overall construct, Spirit Map views an individual's overall spiritual well-being to be a function of a specific bundle of attributes that define the overall construct: the 44 items on the Spirit Map inventory (e.g. *I care deeply about the welfare of others; my life has meaning and purpose; I seek opportunities to learn and grow.)* These are attributes that respondents evaluate, weight, and integrate in whatever way they choose to come up with a rating of overall spiritual well-being.

In what might be a bit of oversimplification, we would point out the following parallel between Spirit Map and job satisfaction. Job satisfaction deals with one's professional life; Spirit Map deals with one's spiritual life. We return to this parallel in the section below titled "Resume Virtues vs. Eulogy Virtues".

Similar Correlation Metrics with Market Research

Spirit Map provides the same type of correlation metrics that we find in similarly structured marketing research studies.

Marketing research studies often correlate the self-reported overall satisfaction with a product or service (e.g., an automobile) with evaluations on the set of attributes that define the product or service (in the case of an automobile these would be attributes like safety, styling, mpg, comfort, etc.). Correlations usually range from a high of 0.70 to a low of 0.20. These correlations, or functions of these correlations, are used to prioritize which attributes are key "correlates of overall satisfaction".

When we look at the correlations between the overall assessment of spiritual well-being in Spirit Map and the presence ratings on the defining set of attributes, (attributes like: *I seek opportunities to learn and grow; My life has meaning and purpose; I care deeply about the welfare of others* , etc.) we find correlations that range from highs of approximately 0.70 to lows just below 0.20; in other words very much in line with what we find in marketing research studies. In fact, in his book "Thinking, Fast and Slow", Daniel Kahneman (2011) mentions that the correlation of 0.66 between two measures in an experiment discussed in the book "…was about as high as correlations between psychological measures can get." (p. 102).

Comparison of Spirit Map with Other Spiritual Well-Being Inventories

The attempt to assess spiritual well-being through a multi-item survey such as Spirit Map is well-documented in the literature. Fisher (2015) reviewed 260 such multi-item spiritual well-being questionnaires. Only one of these, however, Fisher's own SHALOM instrument, elicits a second measurement of importance for each inventory item the way Spirit Map does. For an extensive comparison between Spirit Map and SHALOM, please request our working paper.

We would also note that the Spiritual Well-Being Questionnaire (SWBQ) developed by Fisher and Gomez (2003), which is the precursor to the SHALOM instrument and does not include the importance component, was judged the best, most promising instrument among ten instruments reviewed by Meezenbroek, et al (2012) We feel the fact that such a recognized instrument felt the need to add importance reinforces our choice to include it from the beginning.

Finally, we would note that the 44 Spirit Map items offer more "granularity" than, for example, the 20 items in Fisher's SWBQ, giving individuals more opportunity to describe how they are doing on potentially important aspects of their spiritual well-being.

Why These 44 Items

The original inventory of items used by Spirit Map consisted of 56 items. This original 56 item set was primarily the result of thinking, writing, and research by three well-established and highly regarded Unitarian Universalist ministers reflecting a professional lifetime dedicated to helping individuals and congregations enhance their individual and collective spiritual growth, transformation, and well-being.

The reduction from 56 to 44 items is primarily the result of an exploratory factor analysis (EFA) with the original 56 items on data collected from four Unitarian Universalist congregations that agreed to participate in a pilot study in 2013 (n = 503). Factor analysis bundles together items that define a common underlying construct or factor. For example, the attributes *I care deeply about the welfare of others* and *I give to others fully and generously* are part of the same bundle.

Items in a given bundle are to some degree measuring the same thing. This redundancy means that we could consider eliminating certain items highly redundant with other items.

In addition to item redundancies, we looked at how individual item presence ratings correlated with the assessment of overall spiritual well-being. We eliminated only items with (1) a high degree of redundancy with other items as determined by the factor analysis and (2) had a relatively low correlation with overall spiritual well-being. Using this procedure we eliminated 12 of the original set of 56 items to arrive at the final set of 44.

Domains of Spiritual Well-Being

The EFA we conducted to help reduce the number of items in the Spirit Map inventory (see previous section) bundled items together into common underlying constructs or factors. We have called these underlying constructs or factors *domains*, according to the practice in the spiritual well-being literature. What is the nature of these underlying domains? We explore this question as it is answered in the literature and as it is answered by an updated analysis of our Spirit Map data.

The Domains of Spiritual Well-Being in the Literature

The National Interfaith Coalition on Aging (NICA, 1975) proposed four main themes in their framework definition of spiritual well-being: "the affirmation of life in a relationship with God, self, community and environment that nurtures and celebrates wholeness" (p. 4). Fisher (2010) says of these relationships, "An extensive review of literature revealed that these four sets of relationships are the key features mentioned when discussing spiritual well-being over the last three decades" (p. 107). Fisher (2010) describes these domains as follows:

> *Personal domain – wherein one intra-relates with oneself with regards to meaning, purpose and values in life . . .*
>
> *Communal domain – as shown in the quality and depth of interpersonal relationships, between self and others, relating to morality culture and religion . . .*
>
> *Environmental domain – beyond care and nurture for the physical and biological, to a sense of awe and wonder, for some the notion of unity with the environment.*
>
> *Transcendental domain – relationship of self with some-thing or some-One beyond the human level . . .* (p. 107)

The Domains of Spiritual Well-Being as Revealed by Spirit Map

By 2019 our data base had grown to 1047. We split this sample into two independent samples (n = 524 and n = 523). With one of the samples, we performed a new EFA

(principal component analysis, oblique rotation) on our enlarged sample of 1048 respondents with a specific goal of seeing if a three to six factor solution would compare favorably with the four domains of spiritual well-being referenced above and at the same time have good psychometric properties.

(The other sample was used in a confirmatory factor analysis (CFA) reported on below).

The sample for this new EFA consisted of 524 adult respondents who have taken the Spirit Map survey on behalf of their congregation or as independent individuals motivated to want the feedback offered by our analysis. We mention this simply to contrast the motivated nature of our sample with the fact that many of the results reported in the literature are based on data from undergraduate students in a psychology or sociology course. The Spirit Map sample is also geographically dispersed with participating congregations in the East (33.5%), Midwest (36.0%) and West (30.5%).

The chosen factor solution yields the following four underlying dimensions or domains, two with two sub-domains:

(1) Personal
    a. Personal: Self-Awareness
    b. Personal: Social Awareness
(2) Communal
(3) Curiosity and Wonder
(4) Spiritual
    a. Spiritual: Seeking
    b. Spiritual: Practice

A word or two about the domain we are calling Curiosity and Wonder. The Wonder part, with items like "*I see beauty all around me*" and "*I experience awe"* parallels nicely with the Environmental domain described above. The Curiosity part introduces a construct that is, to our knowledge, unique to Spirit Map. Items like "*I seek opportunities to learn and grow*" and *"I am curious to learn more about how the world around me works*" add a component to spiritual well-being that, according to our subject-matter experts, is critical to a life of spiritual growth and transformation. And, indeed, the two curiosity items listed above are in the top five most-frequent signature strengths (as is *I experience awe*).

The tables below show each domain, what Spirit Map items define that domain, and the factor loadings for each item. The higher the loading the higher the degree of association with the factor. We assigned each item to the domain where it has the highest loading. There are five items (2,4,5,27, and 31) whose loadings suggest membership in two or more domains as identified in the last table below.

Personal: Self-Awareness		
Item #	Item	Oblique Loading *100
12	I am reflective.	64
25	Awareness of my mortality informs how I live my life.	63
22	I am mindful of my emotions.	53

20	I am self-aware.	50
26	Having good boundaries allows me to act with intention.	41
23	I see something universal in all human struggle.	38
24	I accept ambiguity as inherent in life.	36

Personal: Social Awareness		
Item#	Item	Oblique Loading *100
35	I'm able to adapt when things do not turn out the way I want.	74
33	I can tell the difference between what I am responsible for, and what I do not control.	71
34	I make good decisions about when to act.	63
37	I have the ability to repent, forgive myself, and change.	55
38	I can ask for and accept forgiveness.	52
44	I can be in the presence of my own or another's pain without needing to flee or fix it.	46
40	I am able to exercise power without corruption. See also Communal.	40
43	I believe my life has meaning and purpose. See also Spiritual: Practice	40
Communal		
Item #	Item	Oblique Loading *100
18	I act with the interests of others in mind.	73
19	I act with integrity.	67
16	I care deeply about the welfare of others.	64
13	I am respectful of the feelings, actions, and opinions of others.	60
10	I give to others fully and generously.	58
15	I act in an authentic manner.	52
14	I take responsibility for the consequences of my actions, even those that are unintended.	52
9	I seek harmony with others.	44
41	I can give loyalty to another's leadership without losing my integrity.	44
40	I am able to exercise power without corruption. See also Personal: Social Awareness.	41
6	Leading a moral life makes me happy.	40
21	I freely and intentionally give my time and energy to others.	38
Curiosity and Wonder		
Item #	Item	Oblique Loading *100
1	I see beauty all around me.	74
3	I delight in experiences both great and small.	67
2	I think about my place in the universe.	59
5	I seek opportunities to learn and grow.	55
4	I feel part of something larger than myself.	51
32	I am curious to learn more about how the world around me works.	49
39	I experience awe. See also Spiritual: Curiosity	45

Spiritual: Seeking		
Item #	Item	Oblique Loading *100
29	I appreciate the beauty and power of religious symbols and rituals other than my own.	70
30	I am aware of some of the limitations or paradoxes of my own preferred religious vocabulary.	69
28	I perceive and respond to truth that is expressed in myth or poetry.	60
36	My spiritual growth is important to me.	52
39	I experience awe. See also Inspiration and Wonder.	36
Spiritual: Practice		
Item #	Item	Oblique Loading *100
8	I actively practice my spiritual or religious faith.	64
42	I act in a religious manner.	66
11	I act in a spiritual manner.	54
7	I have a clear purpose to my life and am able to articulate that purpose to both myself and others.	47
43	I believe my life has meaning and purpose. See also Personal: Social Awareness.	43
Items in Two Domains and Items with Max Loading < 0.35 On Any One Domain (further explanation below)		
Item #	Item	Oblique Loading *100
39	I experience awe. (Curiosity and Wonder and Spiritual: Seeking)	45 and 36
40	I am able to exercise power without corruption. (Communal and Personal: Social Awareness	41 and 40
43	I believe my life has meaning and purpose. (Spiritual: Practice and Personal: Social Awareness)	43 and 40
27	Even though I cannot know exactly what will happen, the promises I make give shape to my future and meaning to my life. (no significant loading on any one domain; loadings range from 11 to 28)	loading range (11 - 28)
31	I act with awareness of my place in the interconnected web of existence. (no significant loading on any one domain; loadings range from 5 to 33)	loading range (5 - 33)
17	I believe it matters what I do. (no significant loading on any one domain; loadings range from -10 to 33)	Loading range (-10 - 33)

Three items in the above table (39, 40, 43) have dual domain membership with relatively high loadings in both domains.

Three items in the above table (17, 27, 31) do not have a sufficiently high loading on any domain. We will continue to use these items in the Spirit Map inventory because:

- They each, especially items 27 and 31, have a strong theoretical connection to liberal religious faith and practice.
- Item 31 ranks relatively high (12th) as a Key Opportunity for Spirit Map respondents and ranks high (4th) as a correlate of overall spiritual well-being when computed from the responses in our database. Item 17 ranks high (3nd) as a Signature Strength for Spirit Map respondents.

We also note that item 27 uses the most words of the 44 items. This "complexity" might contribute to its lack of significant association with any of the six factors.

Spirit Map does not yet report domain scores. We have and will continue to use them for research purposes. We are also in the process of investigating the potential value of telling individuals or groups what domain their Signature Strengths and Key Opportunities belong to. When we do, when items 39, 40, and 43 appear as Signature Strengths or Key Opportunities, we will assign their domain membership as it provides the most potential insight for the individual. When items 17, 27, and 32 appear as Signature Strengths or Key Opportunities, we will not make any domain reference.

We believe that the spiritual well-being domains revealed by the items in the Spirit Map inventory show good alignment with other postulated and well-researched spirituality domains. This alignment is particularly compelling, given the fact that the spiritual well-being domains of Spirit Map emerge from items generated totally independently from any consideration of the items explored by researchers like Fisher and without any consideration of domains of spiritual well-being, as posited, for example, by the NICA or Fisher.

Three important differences between Spirit Map domains and the domains discussed in the literature:

1. Spirit Map does not mention God, Creator, or prayer, but in its stated effort to remain faith-neutral substitutes items that relate to a spiritual life, such as "*I act in a spiritual manner*." Thus, in place of a Transcendental domain, the Spirit Map items partition into two Spiritual domains relating to two different aspects of a spiritual life.
2. The items in the Spirit Map inventory are such that they partition into two domains that speak to two different aspects of a relationship with oneself (Personal).
3. The two Spirit Map items that deal with meaning and purpose do not attach to either of the Personal Spirit Map domains, as might be expected from Fisher's description of that domain in his findings.

We have a hypothesis for the third difference above, related to the samples used in Fisher's studies vs. those used in our Spirit Map research. The two Spirit Map items related to meaning and purpose are:

- *I have a clear purpose to my life and am able to articulate that purpose to both myself and others* (Item 7)
- *I believe my life has meaning and purpose* (Item 43)

Given Fisher's description of his Personal domain "wherein one intra-relates with oneself with regards to meaning, purpose and values in life" we would have expected these two Spirit Map items to attach to either of the two Personal Spirit Map domains. Instead, they attach to the Spirit Map domain Spiritual: Practice.

Most of the analytical work establishing Fisher's domains of spiritual well-being, using his SHALOM or the SWBQ inventories, was carried out, as many academic researchers do, with college students. All of the developmental work of Spirit Map has been carried out on older adults who came to the Spirit Map task either as an individual motivated to discover more about where they are on their spiritual journey or as member of a congregation motivated to help their congregation discover more about the spiritual well-being of its congregants and/or motivated to discover more about their own personal spiritual well-being.

What our EFA suggests is that our Spirit Map adults to a large degree associate meaning and purpose in their lives with their spiritual lives. This association is, apparently, not nearly as strong among younger, perhaps less spiritually motived, college students.

When we examine the correlates of overall spiritual well-being, this analysis also supports finding the two meaning and purpose Spirit Map items in one of the Spiritual domains. As mentioned earlier, when people take the Spirit Map inventory, we ask them "*How would you rate your current level of overall spiritual well-being? (1 – 10).*" When we correlate the self-assessment ratings of each of the 44 items with this overall spiritual well-being rating, here are the top six correlations:

Correlation	Item number	Item
0.590	8	I actively practice my spiritual/religious faith
0.504	11	I act in a spiritual manner
0.479	7	I have a clear purpose to my life and am able to articulate that purpose to both myself and others.
0.467	31	I act with awareness of my place in the interconnected web of existence.
0.453	42	I act in a religious manner
0.444	43	I believe my life has meaning and purpose.

The domain we have named Spiritual: Practice is defined by five of these six items (all but item 31). The fact that the meaning and purpose items (7 and 43) correlate with overall spiritual well-being as strongly as the items in the Spiritual: Practice domain (8, 11, and 42) provides support that they belong together.

A final observation regarding the connection of spiritual practice with meaning and purpose is the ease of finding academics who make the connection. Here are three quotes:

- From Brené Brown (author of five NYT bestsellers, professor at the University of Houston), *"Practicing spirituality brings a sense of perspective, meaning, and purpose to our lives."*
- From The Earl E Bakken Center for Spirituality & Healing website at the University of Minnesota, "*Spirituality is a broad concept with room for many perspectives. In general, it includes a sense of connection to something bigger than ourselves, and it typically involves a search for meaning in life."*
- From Christina Puchalski (MD, Director of the George Washington Institute for Spirituality and Health), "*Spirituality is the aspect of humanity that refers to the way individuals seek and express meaning and purpose and the way they experience their connectedness to the moment, to self, to other, to nature, and to the significant or sacred."*

Psychometric Properties of the Spirit Map Items and Six-Factor Solution
The factor analysis reported here was a principal component analysis with an oblique (oblimin) rotation. The oblique rotation was used to follow the procedure used by Gomez and Fisher (2003, p. 1980). The rest of this section details several properties of this analysis.

Sample Size and Item Number Ratio
The sample size was 524 resulting in a ratio of N/n (sample size to number of items: 524/44) of 11.9. Ideally this ratio is 10.0 or greater.

Sample Adequacy (KMO Measure)
A key measure of sampling adequacy (MSA) of a data set is the Kaiser-Meyer-Olkin (KMO) measure for each item and in total. Ideally these values would be >= 0.70, a hurdle cleared by all items and in total as illustrated in the following table:

Item	1	2	3	4	5	6	7	8	9	10
KMO	0.93	0.93	0.93	0.95	0.93	0.95	0.94	0.95	0.96	0.95
Item	11	12	13	14	15	16	18	19	20	
KMO	0.95	0.92	0.94	0.94	0.95	0.95	0.94	0.94	0.95	
Item	21	22	23	24	25	26	28	29	30	
KMO	0.96	0.96	0.95	0.92	0.95	0.96	0.94	0.93	0.91	
Item	32	33	34	35	36	37	38	39	40	
KMO	0.89	0.95	0.95	0.95	0.93	0.94	0.94	0.96	0.95	
Item	41	42	43	44	**overall**					
KMO	0.96	0.95	0.94	0.96	**0.94**					

Internal Consistency Reliability (Cronbach's α)
When ratings for individual items are combined to form a composite score on a domain, they need to exhibit internal consistency. Internal consistency reliability reflects the extent to which a set of items is measuring the same construct. It is most often calculated using Cronbach's coefficient alpha.

General rule of thumb for Cronbach's coefficient alpha:

0.60 = OK
0.70 = Good
0.80 = Very Good
0.90 = Excellent
>0.95 = too high (items are too inter-related and therefore some are redundant).

Cronbach's alpha scores for our six domains range from a high of 0.89 to a low of 0.76, with all alphas well above 0.70 suggesting good internal reliability across the board:

Domain	**Cronbach's α**
Personal: Self-Awareness	0.82
Personal: Social Awareness	0.86
Communal	0.89
Curiosity and Wonder	0.81
Spiritual: Seeking	0.81
Spiritual: Practice	0.85

A closer look at Cronbach's Alpha examines the individual item contribution to overall scale reliabilities (Cronbach's Alpha). This further analysis indicates that most of the Spirit Map items strongly contribute to scale reliabilities. The table on the next page shows the impact on Cronbach's alpha if a given item is removed from the domain and alpha is recalculated; in almost all cases alpha is reduced. Only in the Communal domain is the item-related reduction in alpha little or none for all items, in all likelihood due to the relatively large number of items in this domain (missing a single item will have minimal impact on the overall domain alpha).

Domain Reliability (Cronbach's α)	Item	Reliability if item is dropped
Personal: Self-Awareness 0.82	12	0.80
	20	0.80
	22	0.79
	23	0.81
	24	0.82
	25	0.80
	26	0.80
Personal: Social Awareness 0.86	33	0.84
	34	0.84
	35	0.85
	37	0.84
	38	0.84
	40	0.85
	43	0.85
	44	0.85

Communal 0.89	6	0.89
	9	0.89
	10	0.88
	13	0.89
	14	0.89
	15	0.88
	16	0.88
	18	0.88
	19	0.88
	21	0.89
	40	0.89
	41	0.89
Curiosity and Wonder 0.81	1	0.77
	2	0.80
	3	0.77
	4	0.78
	5	0.79
	32	0.81
	39	0.79
Spiritual: Seeking 0.81	28	0.76
	29	0.73
	30	0.79
	36	0.76
	39	0.80
Spiritual: Practice 0.85	7	0.83
	8	0.80
	11	0.82
	42	0.82
	43	0.83

RMSR

The root mean square of the residuals (RMSR) for this six-factor solution is 0.04. Ideally this metric should be <= 0.08, so our results meet this benchmark.

Number of Factors Extracted

When performing a factor analysis one of the key decisions the analyst must consider is how many factors to extract. Some key considerations:

- What does theory say? In this case the literature would suggest four domains (factors) of spiritual well-being. Our six domains nicely parallel these four with an expanded Personal domain into a two-aspect relation with self and an expanded two-aspect Spiritual domain in place of a single Transcendental domain.
- Can the factors be interpreted? We think the Spirit Map factors qualify; see the

discussion comparing the Spirit Map domains to those in the literature.

- Do the factors explain at least 50% of the item variance? The six extracted factors explain 57% of the variance.
- Are the eigen values for the extracted factors >= 1.0? In this case the eigen values for the six factors are all 1.21 or greater (the seventh eigen value is also above 1.0 at 1.06).

Validity and Reliability Issues

The Idiographic Nature of Spirit Map

In considering validity, it's important to first understand in what ways Spirit Map is an idiographic or, perhaps better described as, a quasi-idiographic assessment instrument in contrast to a nomothetic assessment. Then we can consider what constitutes validity of an idiographic instrument.

Wikipedia (Wikipedia contributors 2019, April 21) captures the essence of the difference between the two forms:

> *In psychology, idiographic describes the study of the individual, who is seen as a unique agent with a unique life history, with properties setting him/her apart from other individuals. Nomothetic describes the study of classes or cohorts of individuals. Here the subject is seen as an exemplar of a population and their corresponding personality traits and behaviors.*

Spirit Map in its usual application is clearly focused on the individual as a unique agent with a unique life history. That said, Spirit Map does have certain characteristics that also pertain to nomothetic instruments and is why we use the term "quasi-idiographic". Consider this characterization of nomothetic instruments from Haynes et al (2000):

> *Nomothetic assessment instruments: (a) involve methods that are standardized across persons, (b) provide measures of identical variables on identical dimensions across persons, (c) depend on aggregated measures obtained from other persons to derive judgments, and (d) are selected for use with a particular client from prior research with persons with similar behavior.* (p. 112)

Characteristics (c) and (d) do not apply. Spirit Map does not rely on aggregated measures (or any other kind of measures) obtained from other persons to derive judgments. The Spirit Map results delivered to a given client are completely self-referenced. Plus, there is no instrument selection involved. Everyone gets the same instrument.

Characteristics (a) and (b) are more complicated. They apply to the Spirit Map instrument in that the inventory is standardized across individuals and the measures collected are across identical variables and dimensions. However, Spirit Map provides individual tailoring (an idiographic characteristic) through the importance ratings respondents provide.

The importance ratings allow the given respondent to indicate how much to count or weight a given item (for each of the 44 items), in terms of its importance to them in their

spiritual life. These unique-to-the-individual importance ratings in effect tailor the resulting analysis to the given individual.

This aspect of Spirit Map is similar to the notion of "assessment congruence" discussed Haynes et al (2009). In that paper they propose that individual items should be weighted by their relevance to the individual and suggest a set of mathematical operations for developing such measures. This, in effect, is what Spirit Map does with direct assessments of importance instead of the elaborate math suggested in the paper (that math requires that a series of repeated measures be taken over a relatively short time period, e.g., assessments for depression or anxiety, which is never part of the Spirit Map protocol).

Validation of *Ideographic* Instruments: Content Validity

We turn now to consider validation issues of idiographic instruments. The literature suggests that content validity is a major consideration. For example, this quote, while clearly pertaining to a clinical setting can also apply, we believe, to the more coaching setting represented by a typical application of Spirit Map:

> *Content validity is a particularly important evaluative dimension for idiographic assessment instruments. The content validity of an idiographic assessment instrument is the degree to which the elements of the instrument are relevant to the client and the degree to which measures represent the array of the client's behavior problems.* (Haynes et all, 2000, p. 125)

More generally, content validity refers to how accurately an assessment tool (in this case Spirit Map and its 44 items) taps into the various aspects of the specific construct in question, in this case spiritual well-being as a universal human experience that transcends specific religious beliefs.

Content Validity of Spirit Map

We look at content validity from two perspectives, that of:

- Subject matter experts (those primarily responsible for the items in the Spirit Map inventory)
- The alignment of the domains of spiritual well-being as revealed by Spirit Map data with other researched domains of spiritual well-being as reported in the literature.

Content Validity - Subject Matter Experts

Content validity is most often assessed by relying on the knowledge of people who are familiar with the construct being measured, so-called Subject-Matter Experts (SME).

The original 56 item set was primarily the result of thinking, writing, and research by three well-established and highly regarded Unitarian Universalist ministers reflecting a professional lifetime dedicated to helping individuals and congregations enhance their individual and collective spiritual growth, transformation, and spiritual well-being. Their familiarity with the domain of spiritual well-being establishes them as Subject Matter Experts and provides a significant level of

confidence that the final set of 44 items (after an initial EFA and subsequent analysis) covers a representative sample of this domain as required to establish content validity for our target market: Unitarian Universalists, others with a progressive religious orientation, and the large and fast-growing population of individuals who identify as spiritual but not religious.[1]

Content Validity - Alignment of Spirit Map domains with domains reported in the literature

While reference to Subject Matter Experts represents the primary method for establishing content validity, the alignment of Spirit Map domains of spiritual well-being with domains reported in the literature represents, in our opinion, supporting evidence of content validity as well. As discussed above, we've concluded that the alignment of the four domains in the literature and the six domains of Spirit Map is good.

Taken together, the credibility of the Subject Matter Experts behind Spirit Map and the good domain alignment, developed independently from other researchers, offer strong evidence for the content validity of the items in the Spirit Map inventory.

Other Validity Considerations

This section highlights two other types of validity—convergent and construct validity—and what it would take to establish them for Spirit Map, and the challenges of establishing them for Spirit Map.

Convergent validity, the degree to which two measures or constructs that theoretically should be related, are in fact related, would provide another perspective on Spirit Map's validity. For example, we could look at convergent validity by looking at the correlations between Spirit Map domain scores and SWBQ domain scores. Because the SWBQ is considered a valid inventory (Gomez and Fisher, 2003), this inventory, we believe, could be used as a benchmark for such a comparison.

To date, we have not had the luxury of asking our Spirit Map respondents (these are non-student samples) to take both surveys so that results can be compared. We will continue to look for opportunities to make this comparison.

Construct validity is the degree to which a measure accurately assesses what it is intended to measure. We could potentially investigate construct validity two ways, focusing on the assessment we ask respondents to give of their overall spiritual well-being (and what that level will be in five years):

- Peer evaluations
- Correlation of Spirit Map measures with measures from another valid instrument.

[1] While there are analytical procedures for combining SME assessments (see for example, Lawshe, C.H. (1975)), none was applied in this case.

Peer evaluations

If in the future we were able to ask for peer evaluations of overall spiritual well-being, we could look at how these peer evaluations correlate with the individual self-reported ratings of their overall spiritual well-being to establish the degree of construct validity of this overall spiritual well-being metric.

Correlation with measures from another valid instrument

Again, if Spirit Map respondents completed a SWBQ inventory too, we could look at the correlation of their Spirit Map rating of overall spiritual well-being with the total SWBQ score as another check on construct validity. Again, because the SWBQ is considered a valid inventory (Gomez and Fisher, 2003), this inventory, we believe, could be used as a benchmark for such a comparison.

We haven't placed a high priority on completing this construct validity research because the rating of overall spiritual well-being is used very minimally in Spirit Map deliverables. It is not used at all in deliverables for individuals. For congregations, we only use overall spiritual well-being in a secondary deliverable called Correlates of Spiritual Well-Being. This deliverable reports how the individual Spirit Map items correlate with overall spiritual well-being.[2] Thus, the cost in time and money to conduct this research is not yet supported by the benefits. We do, however, see the potential for further research using the metric of overall spiritual well-being (see the section *Continuing and Future Research and Development Opportunities* below).

We also have not investigated the construct validity of the 44 self-assessment and 44 importance ratings, because these are idiographic evaluations and are not subject to any external determination, either from peers or from comparison with measures from some other instrument. The ratings are based on an individual's personal spiritual journey and life experiences; they uniquely belong to the individual. Only the individual can determine whether one item is relatively more important than another in their spiritual life. Only the individual can accurately determine whether one item is relatively more true of them than another.

What Can We Say About Reliability?

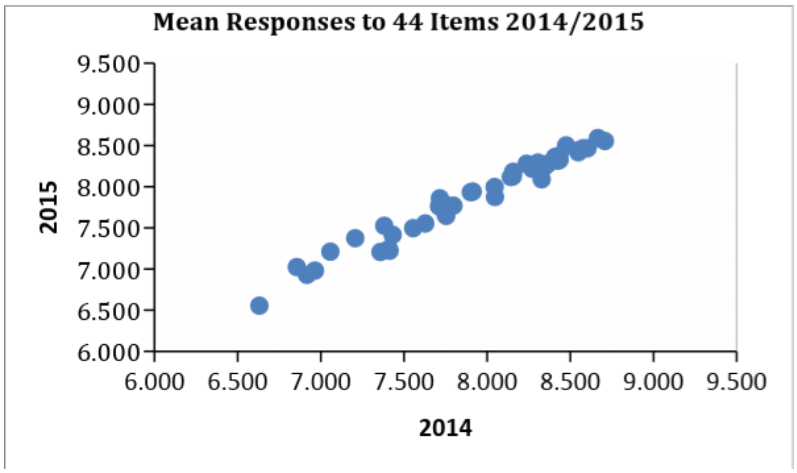
We discussed above the internal consistency reliability for the six domains of Spirit Map as measured by Cronbach's alpha. The more common type of reliability is that of test-retest reliability. This means that if the test is administered at time 1 and again at time 2, and there is no reason to expect significant changes in the ratings of the items being measured during this time interval (e.g., no "clinical" intervention), then the ratings at time 2 should not have changed significantly from the ratings at time 1.

Normally reliability is established at the individual respondent level. Do Spirit Map attribute ratings for individuals at time 1 have a high correlation with attribute ratings for the same individuals at time 2? We have administered Spirit Map at two different points in time – a year apart – in one congregation. However, these administrations have necessarily been

[2] We note that all 44 items have a positive correlation (ranging from 0.10 to 0.70) with this measure of overall spiritual well-being.

done anonymously precluding the ability to look test-retest correlations across individuals. While not ideal, we can look at the correlation of self-assessment mean scores for the two points in time[3].

This correlation of 0.985 suggests very similar, stable, readings for the 44 survey items over the two time periods (n = 343 in 2014 and n = 261 in 2015). The maximum correlation between two variables is 1.000.



Resume Virtues vs. Eulogy Virtues:
Comparison Between Strengths Finder and Spirit Map

David Brooks (2015) discusses eulogy virtues (how we want to be remembered) and resume virtues (important for competition with others):

> *It occurred to me that there were two sets of virtues, the résumé virtues and the eulogy virtues. The résumé virtues are the skills you bring to the marketplace. The eulogy virtues are the ones that are talked about at your funeral — whether you were kind, brave, honest or faithful. Were you capable of deep love? We all know that the eulogy virtues are more important than the résumé ones. But our culture and our educational systems spend more time teaching the skills and strategies you need for career success than the qualities you need to radiate that sort of inner light. Many of us are clearer on how to build an external career than on how to build inner character.*

A popular survey and analysis tool called Strengths Finder (from Gallup) deals with resume virtues. Spirit Map deals with eulogy virtues. Spirit Map, in addition to identifying your Signature (Eulogy) Strengths – to parallel the (Resume) Strengths of Strength Finder - also identifies those areas – Key Opportunities – that offer opportunities for spiritual growth and

[3] In these congregational studies we used a derived measure of importance based on the item correlations with the overall measure of spiritual well-being. In our work with individuals we use a direct rating of importance as described in the first section of this paper (referred to as a self-explicated measure of importance). For the derived importance measures the correlation of mean scores across the 44 items in the two administrations of the survey is 0.764.

development.

The Key Opportunities Spirit Map identifies, particularly when addressed using the Signature Strengths Spirit Map identifies, can help close the gap that Brooks (2015) says "opens between your actual self and your desired self..." when "you live for external achievement, [and] years pass and the deepest parts of you go unexplored and unstructured. You lack a moral vocabulary . . .you live with an unconscious boredom, separated from the deepest meaning of life and the highest moral joys." Work with Spirit Map's Signature Strengths and Key Opportunities can help reconnect people with their meaning, purpose, peace and joy.

Confirmatory Factor Analysis

We mentioned in our discussion above regarding the EFA that we had split our current Spirit Map database into two independent samples (n = 524 and n = 523). We used one of the samples for the EFA which we explored in the section above titled **The Domains of Spiritual Well-Being as Revealed by Spirit Map** and the other for a confirmatory factor analysis (CFA) which we explore in this section.

In a way, the EFA reported above could be considered an informal CFA in the sense that the six domains (factors) identified in that analysis match well with similar domains reported in the literature on spiritual well-being.

In this section we report on a formal confirmatory factor analysis (CFA) for our Spirit Map model. This CFA yields metrics that in our view qualify as good or acceptable and thus supports the construct validity of Spirit Map.

This section also explores the degree to which the correlations that exist among the six domain scores from the primary CFA support the hypothesis of a single, overall spiritual well-being factor. We conclude that this hypothesis is supported.

Sample

The sample for this analysis consisted of surveys from individuals who responded acting either (a) as members of their congregation or (b) as their own agent. The total size is n = 523.

Model Structure

The six-domain structure investigated has the following configuration of items for each domain.

Domain	Items
Personal: Self-Awareness	12, 20, 22, 23, 24, 25, 26
Personal: Social Awareness	33, 34, 35, 37, 38, 40, 43 44,
Communal	6, 9, 10, 13, 14, 15, 16, 18, 19, 21, 40, 41
Curiosity and Wonder	1, 2, 3, 4, 5, 32, 39
Spiritual: Seeking	28, 29, 30, 36, 39
Spiritual: Practice	7, 8, 11, 42, 43

There are three items, 39, 40, and 43, that are part of the domain configuration in two domains. This was suggested by relatively high cross-loading in each domain by the EFA. Consideration of these dual assignments by the project team was judged appropriate given the nature of the individual items and the essence of the meanings of the corresponding domains.

Three items, 17, 27 and 31, had maximum loadings of <0.35 and were dropped from this CFA.

CFA Results

The CFA was run using the lavaan (latent variable analysis) procedure in R. The key fit metrics from that analysis are as follows:

Fit Metric	CFA metrics for Spirit Map	Cut-off for good fit[4]
Chi-square	p-value = 0.00	p-value > 0.05
CFI	0..76	>= 0.90
TLI	0.74	>= 0.95
RMSEA	0.078	< 0.08
SRMR	0.067	< 0.08

The RMSEA and SRMSR for the CFA for Spirit Map meet the criteria for a good fit. On the other hand, the CFI and TLI for Spirit Map fall short. For sample sizes as large as the one used for this analysis one doesn't expect to be able to meet the p-value criterion for Chi-square.

The lavaan procedure provides an option to look for links or paths which if added to the model would most improve the fit. This procedure produces what are called "modification indices" and ranks the possible paths by their modification indices. In a CFA there is not much we can do by way of adding regression paths - links between latent and observed variables - to improve model fit, as all regression paths between latent and observed variables are already in place; to add such paths would compromise the confirmatory nature of the analysis. However, in a CFA we can look for high ranking modification indices

[4] Cornell University Statistical Consulting Unit

for covariances. The most appropriate modifications available to us is to covary error terms that are part of the same factor. In addition to being part of the same factor, if the wording of the pair of items is also similar it increases the likelihood that their errors would covary. This is true for the items for several of the pairs selected. For example, the first three pairs of error covariances added are for the following pair of items:

Items 37 (*I have the ability to repent, forgive myself, and change*) and 38 (*I can ask for and accept forgiveness*)
Items 7 (*I have a clear purpose to my life and am able to articulate that purpose to both myself and others*) and 43 (*I believe my life has meaning and purpose*)
Items 10 (*I give to others fully and generously*) and 21 (*I freely and intentionally give my time and energy to others*)

Based on these guidelines, we added seven item-pair covariances as suggested by the modification procedure of lavaan. Six of these covariances are, as just stated, for items within the same domain (factor); the seventh is for two items in the two spiritual sub-factors. We note that the seven item-pair covariances represent 4.1% of the possible intra-domain item-pair covariances. The results for this new model with the added covariances are as follows:

Fit Metric	CFA metrics for Spirit Map	Cut-off for good fit[1]
Chi-square	p-value = 0.00	p-value > 0.05
CFI	0.81	>= 0.90
TLI	0.79	>= 0.95
RMSEA	0.070	< 0.08
SRMR	0.064	<0.08

All fit metrics improve with the added covariance paths with the CFI and TLI metrics still falling short, but more in the "ballpark" for a good fit. And when we compare these fit metrics with those from two "popular" models below, we find these ballpark metrics compare favorably.

Hierarchical, Second Order Factor- Overall Spiritual Well-Being

In the CFA model described above with the added covariances the between-domain correlations range from a high of 0.80 (personal: social awareness and personal: self-awareness) to a low of 0.44 (communal and spiritual: curiosity). These correlations are all positive and statistically significant suggesting that these latent domains (factors) may be related to a single higher order factor - which we might call overall spiritual well-being. In other words: a general, single overall spiritual well-being factor might explain the between-domain correlations among the domain-specific (first order) spiritual well-being factors.

Using the lavaan CFA procedure in R we can model such a higher, second order factor. The CFA metrics for this second order hierarchical model are shown in this table.

Fit Metric	CFA metrics for Spirit Map	Cut-off for good fit[1]
Chi-square	p-value = 0.00	p-value > 0.05
CFI	0.80	>= 0.90
TLI	0.79	>= 0.95
RMSEA	0.071	< 0.08
SRMR	0.067	< 0.08

The results for this second order model meet the fit criteria for RMSEA and SRMSR; they fall short for the CFI and TLI metrics.

While these results for the second order, hierarchical model are not as great as we would like, they compare favorably to the Fisher model we discuss in the next section and provide evidence of a higher order spiritual well-being model.

Comparison With Two Other Models

In this section we look at CFA metrics for two popular models. One is the Fisher model referenced many times in this paper. The other is the Intercultural Development Inventory (IDI).

We look at the IDI results first. This inventory assesses intercultural competence - the capability to shift cultural perspective and appropriately adapt behavior to cultural differences and commonalities. This inventory has structural similarities with Spirit Map. There are five factors and 45 inventory items. The number of items for a given factor range from a low of 5 to a high of 15 (in Spirit Map the range is from 4 to12). The following CFA results are reported by ACS Ventures in a paper titled Validation Analysis of the Intercultural Development Inventory (IDI), June, 2017. The pair of values in the table below are for two samples: education sample/ organizational sample.

Fit Metric	CFA metrics for IDI	Cut-off for good fit[1]
Chi-square	p-value = 0.00/0.00	p-value > 0.05
CFI	0.76/0.80	>= 0.90
TLI	0.76/0.79	>=0.95
RMSEA	0.055/0.052	< 0.08
SRMR	0.072/0.064	< 0.08

As with Spirit Map, the IDI model CFI and TLI metrics do not meet the good fit criteria for either the education or the organizational samples; and like Spirit Map both IDI samples meet the good fit criteria for RMSEA and SRMR.

We can dig a little deeper and look at direct comparisons between Spirit Map and IDI CFA metrics. The fit metrics for the Spirit Map CFA - whether we look at the model without or with item covariances - are as good or better than the corresponding metrics for the IDI education model with the exception of the RMSEA metric (where both Spirit Map and IDI metrics meet the good fit criteria). The metrics for the Spirit Map CFA model with item

covariance are as good or better than the corresponding metrics for the IDI organizational model with the exception of the RMSEA metric (where, again, both Spirit Map and IDI metrics meet the good fit criteria. The Spirit Map CFA model without covariance metrics are in the ball park of those for the IDI organizational sample with the exception of the RMSEA metric where both meet the good fit criteria.

Regarding the IDI, the authors conclude "Overall, the Confirmatory Factor Analysis on the Education and Organization data sets suggests the five-factor model is a reasonably good fit to the data." The metrics presented are for the five-factor model.

Turning to the Fisher model we reproduce results from his paper (co-authored with R. Gomez) "Domains of Spiritual Well-Being and Development and Validation of the Spiritual Well-Being Questionnaire", J. of Personality and Individual differences 35 (8): 1975 - 1991, December, 2003. The SWBQ is a 20-item questionnaire with the 20 items partitioned into four domains (factors). This model has been discussed in considerable detail in this paper.

Results are presented from two CFA studies for both a four-factor oblique model and a hierarchical, second order model. Fisher used LISREL software to conduct these CFAs. Instead of the CFI and TLI metrics reported for Spirit Map and the IDI, two similar metrics - GFI and AGFI - are reported by LISREL. The SRMR metric reported by LISREL is the same as reported for the Spirit Map and IDI CFAs; the RMSEA metric is not reported by Fisher. We have indicated "good fit" criteria for the three reported metrics.

SWBQ CFA Results	GFI/0.95[1]	AGFI/0.90[1]	SRMR/0.08[1]
Study 3			
4-factor (oblique)	0.93	0.92	0.04
2nd order model	0.89	0.86	0.09
Study 4			
4-factor (oblique)	0.90	0.87	0.05
2nd order model	0.86	0.83	0.10

The fit metrics for the 4-factor SWBQ models meet the SRMR criteria for both studies, but fall short for the GFI criteria in both studies; the AGFI fit metric meets the criteria for one study (3), but not the other study (4). In other words, sort of a mixed bag based on fit metrics alone. For comparison, the 6-factor Spirit Map metrics meet both the SRMR and RMSEA fit criteria and fall short of the fit criteria for the other two; another mixed bag.

The fit metrics for both SWBQ 2nd order models (studies 3 and 4) fail to meet any of the criteria values for a good fit. In contrast, the fit metrics for the 2nd order Spirit Map model do meet two of its four fit criteria (SRMR and RMSEA) and fall short for the other two (CFI and TLI). We conclude that the metrics for the Spirit Map CFA for the hierarchical model, overall, are not worse for than those for the SWBQ CFA.

Overall, considering both the primary models and second order hierarchical models, we conclude that the fit metrics for the Spirit Map CFAs compare favorably to those of the SWBQ CFAs.

The conclusion of Fisher regarding the CFAs for the SWBQ is "…these results indicate evidence for the construct validity of the SWBQ, and also Fisher's model of spiritual well-being and the hierarchical second order spiritual well-being models."

Conclusion

The Confirmatory Factor Analysis performed on Spirit Map data supports the structural integrity of the model. The stand-alone results as represented by the fit metrics meet established criteria for good model fit for two of the metrics - RMSEA and SRMSR - and are in the ballpark for two other metrics - CFI and TLI. Comparing the fit metrics for the Spirit Map CFA to those of two other validated models - IDI and the SWBQ - provides additional support for the structural integrity of the Spirit Map model.

Additionally, the Spirit Map CFA results - both stand alone and in comparison with the SWBQ results - support the existence of a hierarchical, second order overall spiritual well-being factor supporting the six first order domains.

Ongoing and Future Research Opportunities

Responses to the Spirit Map inventory offer a rich set of data for research. We discuss one investigation of spiritual types and three opportunities for future research.

Investigate the Existence of Spiritual Types

We now have sufficient sample size to investigate the possible existence of meaningful "Spiritual Types" using a statistical procedure called cluster analysis.

See the special section following Appendix B for a detailed discussion of this investigation.

Three Opportunities for Future Research

1: Determine Domain Patterns in Signature Strengths and Key Opportunities

We would study whether our six domains help in developing higher-level themes for Key Opportunities and Signature Strengths. We would look at the extent to which the domains of spiritual well-being associated with an individual's or congregation's Signature Strengths and Key Opportunities overlap. If they don't overlap, and preliminary analysis suggests they tend not to, we would explore the degree to which individuals or congregations find it useful to know what domain of spiritual well-being their Signature Strengths and Key Opportunities belong to.

2: Determine What Items Are Related to Spiritual Well-Being Categories

Suppose we group people into overall spiritual well-being categories based on their rating of their level of overall spiritual well-being, something like the following:

- 9 or 10 = very high spiritual well-being
- 7 or 8 = high
- 5 or 6 = moderate
- 1 through 4 = low spiritual well-being

We could then use a data-mining tool like CART to determine a decision-tree to predict category membership based on the self-assessment ratings of the 44 items. We could determine which of the 44 items would be involved in predicting membership in a given category and how would the items differ category-to-category.

3: Compare the Dissonance/Harmony and Distance Results

Fisher (2010) introduces the notion of a harmony/dissonance calculation as a function of the two measurements elicited for each item in the SHALOM survey. In our working paper that compares Spirit Map and SHALOM (available on request) we note how the Spirit Map distance calculation, and the dissonance/harmony calculation can lead to different prioritizations among multiple items. We need to better understand the nature and implication of these differences.

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Appendix A – Determination of Signature Strengths and Key Opportunities

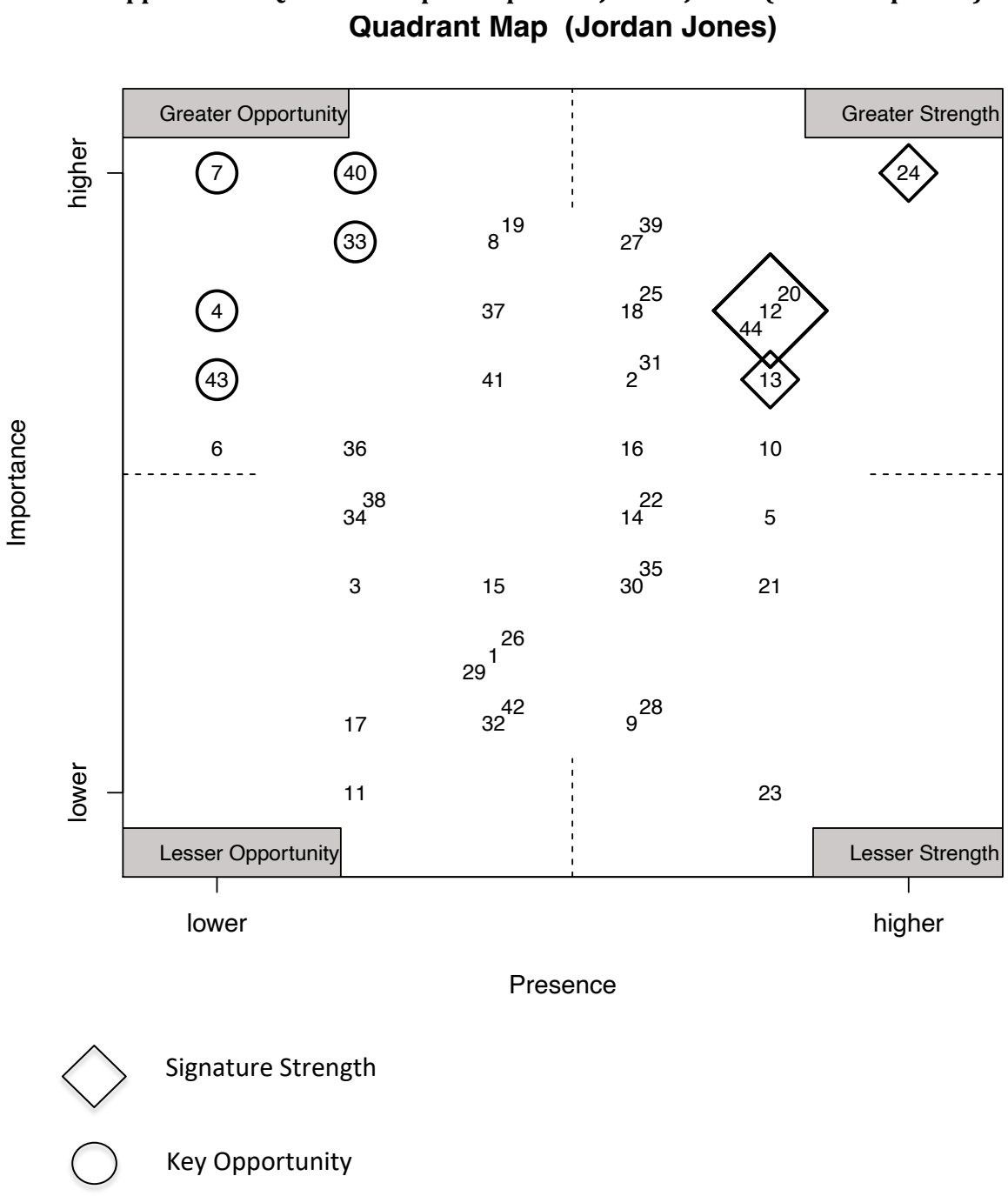
Spirit Map creates a prioritizing metric for each of the 44 items based on a straight-forward distance calculation.

Assumptions: The point (10,10) – self-assessment rating a 10, importance rating a 10 – represents maximum strength. An item with these coordinates is one maximally important and one that is maximally true of an individual. This item is the ultimate Signature Strength. The point (1,10) – self-assessment rating a 1, important rating a 10 – represents maximum opportunity. Such an item is maximally important, but one that is minimally true for an individual. This item is the ultimate Key Opportunity. Based on these assumptions, Spirit Map performs the following calculations for each of the 44 items.

For items with self-assessment ratings >= the average self-assessment rating, calculate the distances to the point with maximum strength, (10,10). The five items closest (shortest distance) to (10,10) are Signature Strengths. On the quadrant map in Appendix B these items are identified by diamonds.

For items with self-assessment ratings < the average self-assessment rating, calculate the distances to the point with maximum opportunity, (1,10). The five items closest (shortest distance) to (1,10) are Key Opportunities. On the quadrant map in Appendix B these items are identified by circles.

Appendix B – Quadrant Map Example for "Jordan Jones" (not a real person)



Special Section: Investigating the Existence of Spiritual Types

Background

Can we identify broadly defined spiritual types (ST) from our Spirit Map data? Those individuals belonging to a given type would exhibit similar patterns of domain presence and importance profiles across the six domains. We've been interested in defining spiritual types from our Spirit Map data so that individuals would have a better idea who they are most like in terms of spiritual presence and importance. This paper examines how we determined that defining spiritual types from our Spirit Map was reasonable, how we went about segmenting the Spirit Map data to produce these spiritual types, and what practical applications might emerge from this work.

Segmenting people into types is, of course, not a new idea. One example is the Myers-Briggs inventory. People who take this inventory can be classified as one of 16 types, e.g. an INTJ (introvert, intuitive, thinking, and judging personality). A second example comes from the commercial world where companies often segment their market based on the importance consumers of the category assign to the attributes that define the products or services offered in the category. A car company may, for example, identify a safety segment/type, a price segment/type, a fun-to-drive segment/type, etc.

In the case of the M-B individuals are classified based on "where they are" today. In the commercial world the classification is more often based on "what they prioritize" or "what is important" when choosing a service or buying a product. In the case of Spirit Map we have both types of measures: where a given individual is today - presence ratings and where that individual wants to be - what's important to them. In the analysis we describe below we use both of these Spirit Map measures to identify segments.

Data

The sample size used for these analyses consisted of 838 usable Spirit Map profiles. These came from six congregations who signed up for Spirit Map and about 200 individual requests for reports. A profile was deemed usable if all 88 ratings were present (44 presence and 44 importance ratings).

For each respondent six importance domain ratings were calculated by averaging the importance ratings assigned to each item making up a given domain. Similarly, six presence domain ratings were calculated by averaging the presence ratings assigned to each item making up a given domain.

For each respondent these two sets of ratings were standardized, separately, to mean 0 and variance 1 before proceeding with the analysis.

Analysis

The following quote is from a reference in the R help section that comes from a Datanovia.com. paper. *"Before applying any clustering method on your data, it's important to evaluate whether the data sets contain meaningful clusters (i.e.: non-random structures) or not. If yes, then how many clusters are there? This process is defined as the assessing of* ***clustering tendency*** *or the feasibility of the clustering analysis."*

The recommended statistic for assessing whether the data set contains meaningful clusters is the Hopkins statistic (H). Continuing to quote from the same source:

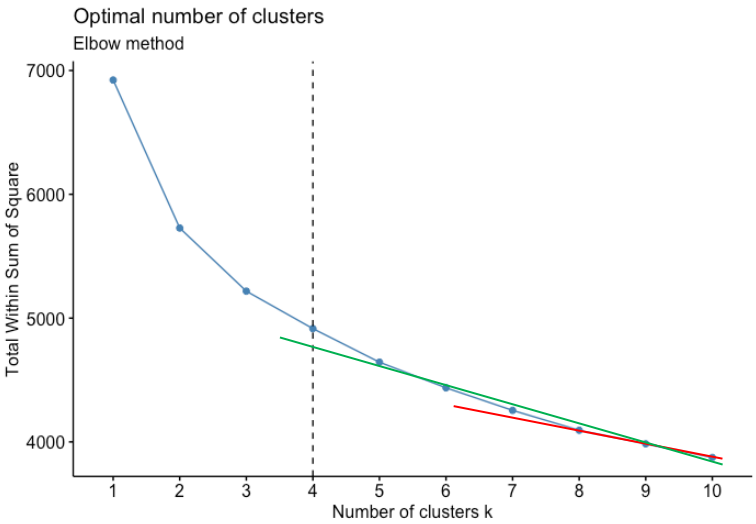
> *The null and the alternative hypotheses are defined as follows:*
> ***Null hypothesis****: the data set D is uniformly distributed (i.e., no meaningful clusters)*
> ***Alternative hypothesis****: the data set D is not uniformly distributed (i.e., contains meaningful clusters)*
>
> *A value for H higher than 0.75 indicates a clustering tendency at the 90% confidence level.*
> *We can conduct the Hopkins Statistic test iteratively, using 0.5 as the threshold to reject the alternative hypothesis. That is, if H < 0.5, then it is unlikely that D has statistically significant clusters*.

The value of H for our data set is 0.66. The p-value for this statistic is 0.12 indicating significance at the 88% confidence level.

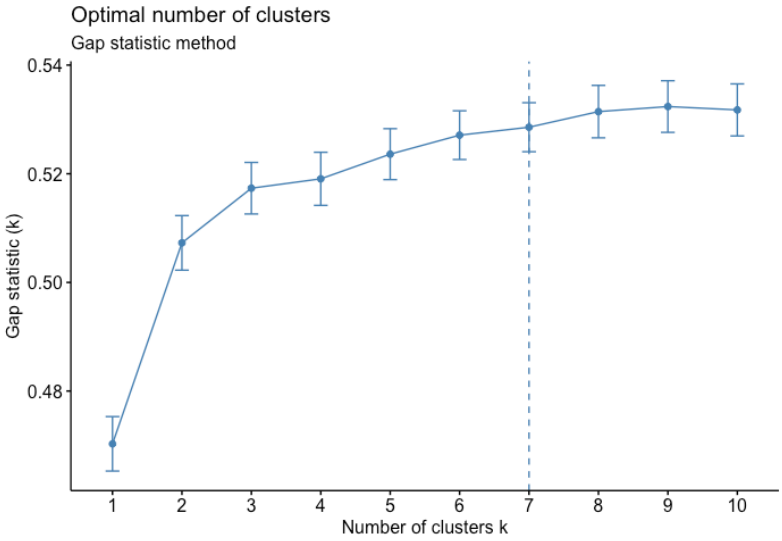
Using the *check clusterstructure* procedure in R on our dataset returns the following result: ***The dataset is suitable for clustering (Hopkins' H = 0.34****)*. Note: the Hopkins stat here is (1 - the Hopkins stat referred to and reported above).

With a green light to proceed the dataset described above was submitted to a K-means cluster analysis using R. The k-means default algorithm of Hartigan and Wong was used.

The classic method for determining the number of clusters is called the "elbow method". The idea is to compute the total within sum-of-sums (WCSS) for a number of different cluster solutions (say 2 - 10), plot the WCSS by the number of clusters and look for an elbow in the graph - a sharp drop in WCSS for a given number of clusters. The elbow chart for the Spirit Map data is shown below. While there is no clear, sharp drop in WCSS the R program *fviz_nbclust* indicates that the optimal number of clusters as determined from this method is 4.



Are there other options that might help determine the number of clusters? Quoting from the same Datanovia - R reference mentioned above, "*The disadvantage of elbow and average silhouette methods is that they measure a global clustering characteristic only. A more sophisticated method is to use the gap statistic which provides a statistical procedure to formalize the elbow/silhouette heuristic in order to estimate the optimal number of clusters*." We'll say a bit more about the silhouette method shortly. Right now, we look at the recommended gap results for our dataset.



The optimal number of clusters from the recommended gap analysis from the same R procedure cited above is 7.

Results

We have used the k-means procedure in R to generate both the recommended 4 and 7 cluster solutions. We focus on the 4-cluster - Four Spiritual Types - solution here. If you wish to receive the results of the 7-cluster solution, fill out our Contact Us page: http://www.spiritmap.org/contact.html.

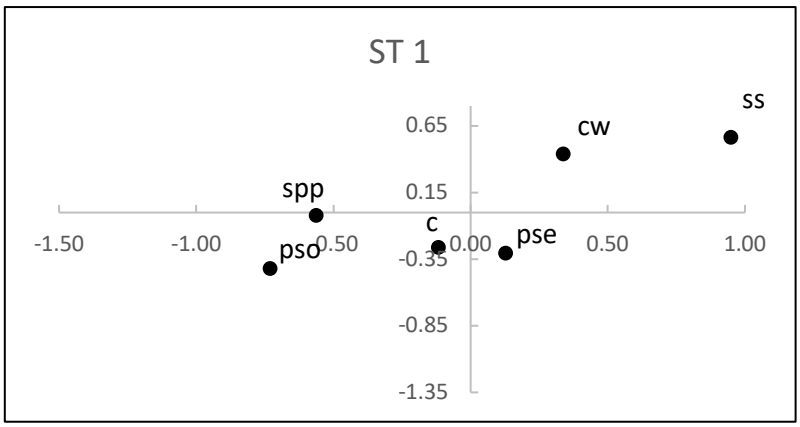
Cluster means:

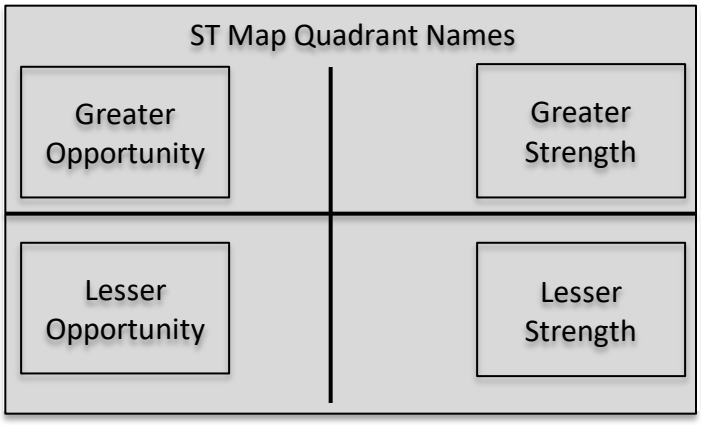
	ci	p1i	p2i	cwi	s1i	s2i	cp	p1p	zp2p	cwp	s1p	s2p
1	-0.26	-0.42	-0.30	0.44	0.56	-0.02	-0.12	-0.73	0.13	0.34	0.95	-0.56
2	0.64	0.27	0.19	0.47	-0.52	-1.06	0.43	-0.29	0.37	0.45	0.45	-1.40
3	0.45	0.21	-0.72	0.66	-0.84	0.24	0.46	-0.52	-0.61	0.76	-0.06	-0.02
4	0.72	0.54	0.08	0.17	-1.34	-0.18	0.75	0.18	0.41	0.09	-1.15	-0.28

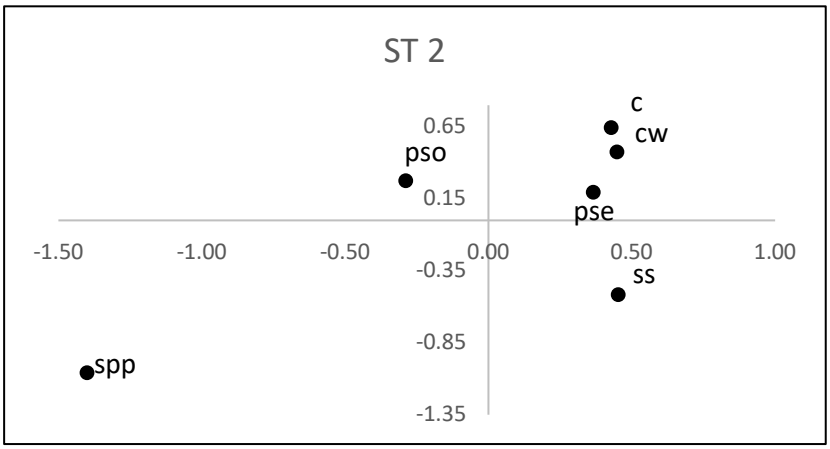
For each segment (1 - 4) there are six domain importance means designated by an “i” at the end of the column label, e.g., ci, p1i, etc. and there are six domain presence means designated by a “p” at the end of the column label, e.g., cp, p1p, etc.

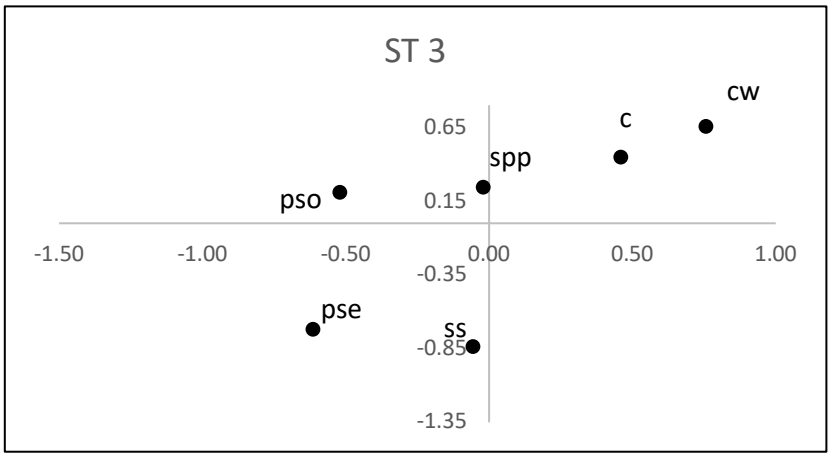
To help us better visualize the differences between these four ST, we can create a quadrant map for each that plots the average presence and importance ratings for the six domains in each ST. We show these four quadrant maps below. To standardize the maps, each ST map:

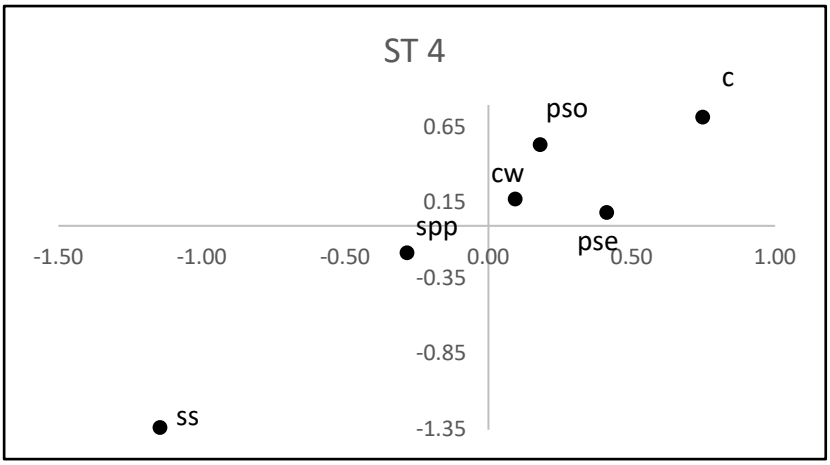
- Has the same min and max end points for the horizontal and vertical axes .
- Crosses the horizonal and vertical axes at zero (0).
- Keeps zero as the mean for the domain presence and importance standardized rating averages. This also keeps the ST maps consistent with the 44-item quadrant maps we produce for individuals and groups.
- Uses abbreviations for the six domains:
    - CW = Curiosity and Wonder
    - C = Communal
    - PSE = Personal Self-Awareness
    - PSO = Personal Social Awareness
    - SPP = Spiritual Practice and Purpose
    - SS = Spiritual Seeking











The chart below shows the demographic data we have for each ST. The alignment number is the average correlation between the 44 presence ratings and importance ratings for members in each ST.

	alignment	age	size	F	M	Other	NR
ST 1	0.401	63.8	18.6	62.2	23.1	4.5	10.3
ST 2	0.446	57.5	28.0	70.2	22.6	1.7	5.5
ST 3	0.411	61.5	20.6	67.1	26.0	1.2	5.8
ST 4	0.535	63.4	32.7	55.1	36.1	1.8	6.9

We can make several observations from these four maps and related demographics.

- The CW domain is a Greater Strength for three of the four STs.
- The C domain is a Greater Strength for three of the four STs
- The largest ST (ST4) has the highest percentage of males; it is also the most aligned segment.
- The smallest ST (ST1) has the highest percentage of (Other) and no gender responses
- The SS domain is the Greater Strength domain for ST1; it is the least present and least important domain for ST4.
- The ST with the largest Female percentage is also the youngest (ST4).
- Only ST1 has one of the spiritual domains (SS) as a signature strength.
- The PSO domain shows up as a Greater Opportunity for ST 2 and ST 3.
- The two Personal domains (PSE and PSO) have the lowest presence ratings in ST3.
- In ST3, the two presence domains (PSE and PSO) have the same presence ratings as do the two spiritual domains (SS and SPP). In addition, the two Spiritual domains (SS and SPP) have mean zero presence ratings in ST3, meaning that they have fairly neutral presence ratings.
- For ST2, four domains have essentially the same and largest presence rating: C, CW, PSE, SS

Application

The existence of these ST might be of some interest from an academic standpoint. Knowing the defining characteristics of these ST and the observations made (and others that could be made) might be of some general interest. Adding the additional (limited) demographic characteristics to the segments adds a bit of additional flavor. What benefits might we gain if we use these ST to "type" individuals and groups?

To type an individual, we need to assign that individual to one of the four ST. To do this, we calculate the standardized presence domain ratings and then calculate the

standardized importance domain ratings for the individual. We then submit these standardized domain ratings to a "typing tool" which calculates the distance of the individual's standardized ratings to the centroid of each ST and identifies the closest ST as the ST the individual belongs to.

To type a congregation, we repeat this set of calculations for each individual in the group and then aggregate the results to provide the size and demographic characteristic of each ST in the group.

Assigning individuals to one of the four ST provides them with an answer to the question of "who they are most like" which is of inherent interest to us as human beings. Where do we belong? In addition, it provides the opportunity to consider the fit of that ST. Which of the individual's domain map locations "line up" with the corresponding domain locations in the ST/segment to which they have been assigned? Which domain locations don't fit so well? Is the fit so poor, a subjective assessment, that we would consider the individual to be more-or-less "unique"?

This type of information and exploration at the individual level can add depth to the information provided by the signature strengths and key opportunities revealed from our analysis of the presence and importance ratings assigned to the original 44-item inventory along with the corresponding quadrant map.

Providing a congregation with the distribution of congregants within the four ST can help inform programming and strategic planning.

For example, if a congregation knew that most of its congregants, say 30%, were ST1, it would know that was unusual, because according to our data base ST1 is the smallest ST. Therefore, approaches and solutions that work in more typical congregations might not apply in this congregation. The congregation would also know that the spiritual seeking domain (SS) and the curiosity and wonder domain (CW) are the two Greater Strength domains for a large part of the congregation. This could affect how they structure worship or the invitation to spiritual practice to help this group of congregants lean on these strengths.

If this same congregation discovered that the fewest number of their congregants, say 19%, were ST4, that would confirm it was unusual, because according to our data base ST4 is the largest ST. In addition, ST4 has the communal domain (C) is the strongest Greater Strength domain with the two personal domains (PSE and PSO) as Greater Strengths as well. How would the congregation lean on this combination of spiritual strengths when it comes from a smaller portion of the congregation? Considering these questions could improve programmatic and strategic planning.

Naming the Segments

It is common in investigations of this type to apply a relatively simple name to the identified segments. For example, if we had conducted a segmentation of the automobile market based on what individuals said was important to them when buying a car, we might have a "safety" segment, a "performance" segment, a "fun to drive" segment, etc. Myers-Briggs has 16 personality types: INTJ, ENFP, ISTP, etc.

We have a team of four individuals, including the two named individuals on this document, all with detailed knowledge of the developmental background of Sprit Map working on this "naming" task. As of this writing, we have had several engaging discussions, and we think we are close …stay tuned.