The Intelligence of Spiritual Intelligence: Making the Case

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Abstract: Spiritual Intelligence (SI) is the ability to draw on and embody spiritual qualities and resources to enhance daily functioning and wellbeing. Despite Gardner's rejection of SI, the proliferation of SI models and research supporting the advantages of SI across a wide field of endeavors, and correlation with neurological structures and genetic indicators strongly support its validity as an intelligence. This article reviewed key models of SI, and studies supporting its adaptability and biological correlates. Puzzling results in some areas warrant exploration, especially the degree to which various models converge and the extent to which a single SI model may be truly universal.

Keywords: spiritual intelligence; emotional intelligence; assessment; training; evolutionary adaptation

1. Introduction

Since the publication of Gardner's (1983) theory of multiple intelligences, interest in new forms of intelligence has burgeoned, with claims made for a variety of intelligences, including: emotional intelligence (e.g., Salovey and Mayer 1990; Schutte et al. 1998), social intelligence (e.g., Ford and Tisak 1983; Goleman 2006), moral intelligence (e.g., Tanner and Christen 2014), existential intelligence (Halama and Striženec 2004) and erotic intelligence (Perel 2007), to name just a few. But what can legitimately be categorized as intelligence?

Gardner (1983) defined intelligence as a set of abilities used to solve problems and create products that are valuable within a cultural setting or community (Gardner 1999, p. 27). With such broad definition, many "sets of abilities" could be categorized as an intelligence. Would a set of abilities to cook gourmet Italian meals or Chinese ones constitute a form of intelligence? Or the ability to make beautiful flower arrangements? What differentiates a cluster of abilities that constitute a form intelligence versus a set of talents and skills, valuable as they maybe in a particular cultural context, but not deserving the category of an "intelligence?"

Gardner (1983) defined seven types of intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and two personal intelligences, an intrapersonal intelligence (the understanding of oneself and "one's own feeling life" [p. 239]), and interpersonal intelligence (the understanding of others through the ability to "make distinctions among other individuals, among their moods, temperaments, motivations, and intentions" [p. 239]). Later, Gardner (2000) added naturalistic intelligence, the ability to recognize patterns among the flora and fauna in the wild. He also suggested the possibility of an existential intelligence, involving the capacity to address existential questions pertaining to "the fact of our existence as individuals in the cosmos and our capacity to puzzle over that fact" (p. 29; cf. Halama and Striženec 2004). Notably, Gardner (1999) emphasized the biological basis and biopsychological aspects of intelligence, adding to the list of criteria for intelligence, including the potential to localize and isolate certain abilities to specialized regions in the brain and an evolutionary history and plausibility for their development. Later, Gardner (2000) stated that an intelligence is innate and differentially distributed, so that some people are "naturally" higher in some types of intelligence and less endowed with others, but also makes the point that intelligences, while they can be developed, are essentially inborn in terms of their strength.

Thus, if we study the brains of gourmet Italian chefs, we may not find any physiological markers associated with their abilities to produce truly delicious Italian dishes, though perhaps they may have better-developed neural capacities for refined taste and smell. And if we could justify creating a category for Italian cooking intelligence, could it be differentiated from Chinese cooking intelligence? All of this indicates that not all sets of abilities would qualify for a form of intelligence using Gardner's criteria.

Can spiritual intelligence qualify as a legitimate form of intelligence? Originally coined by Danah Zohar (1997), spiritual intelligence (SI) refers to a set of abilities to draw on and embody spiritual qualities and resources to enhance daily functioning and wellbeing (Amram 2007, p. 2). Spirituality generally refers to the "capacity and tendency in all human beings to find and construct meaning about life and existence and to move towards personal growth, responsibility, and relationship with others" (Myers and Williard 2003, p. 149; cf. Elkins et al. 1988; Hill and Pargament 2003; Kimball et al. 2016; Pargament 2007; Shults and Sandage 2006). A spiritual experience "can involve transcendence, ineffability, mystery, feelings 'deep in one's soul,' beauty, goodness, contemplation, a sense of inspiration or renewal, encounter with sublime natural settings, and intuition of the divine; it is often characterized by a sense of awe, unity, personal balance, or inner peace" (Hitzhusen 2004, p. 41; cf. Hinterkopf 1994; Laubach 2004; May 1974; Myers and Williard 2003; Prest and Keller 1993; Selvey 1977). Spiritual Intelligence, on the other hand, emphasizes the abilities that draw on such themes to predict functioning and adaptation. Hence, SI can be differentiated from spirituality per se, spiritual experience, and spiritual belief, such as a belief in God or in the eternity of the soul. Indeed, countering Emmons (2000), who looked at spirituality through the lens of intelligence, Gardner (2000) argued for teasing apart "those aspects of spirituality that have to do with phenomenological experience or with desired values or behaviors best deemed external to the intellectual sphere" (p. 27). Regarding Gardner's second argument, which seeks to confine the construct of intelligence to the "intellectual sphere," Gardner himself identifies intelligences, such as bodily-kinesthetic, which seem to fall outside cognition, per se.

Much like other widely accepted forms of intelligence, such as emotional intelligence (Mayer and Salovey 1993; Schutte et al. 1998)—and congruent with Gardner's (1999) criteria–spiritual intelligence has been validated by several independently developed instruments, discussed below, thus meeting standard criteria for the establishment of a new construct, including construct, discriminant, and predictive validity across different cultural contexts and languages (and meeting Gardner's (1999) criteria for support from psychometric findings and experiments). Although it appears to overlap aspects of emotional intelligence, nevertheless it is distinct in some areas, as has been shown in a number of studies (e.g., Kaur et al. 2015; King et al. 2012; Shabani et al. 2010; Sharma 2017b; differentiating SI and EI is beyond the scope of this paper). Furthermore, although some SI scales have been developed to be culturally specific (e.g., Dhar and Dhar 2010; Jumahat et al. 2015; Kumar and Mehta 2011), others (e.g., Amram and Dryer 2008; King and DeCicco 2009) have demonstrated cross-cultural validity. SI, while an innate capacity, is one that, like any other intelligence, can be cultivated (e.g., Charkhabi et al. 2014; Heydari et al. 2017, 2018; Hosseinpour et al. 2020). Importantly, as an intelligence, SI has been shown in numerous studies to be associated with and to predict various positive outcomes cross-culturally (e.g., Amirian and Fazilat-Pour 2016; Khosravi and Nikmanesh 2014; Kaur et al. 2015; Mansouri et al. 2016; Pant and Srivastava 2019; Pasyar et al. 2020). Finally, research has shown that aspects of SI are reliant on the use and development of certain neurological networks in the brain, analogous to the ways in which mathematical and linguistic intelligences are associated with certain brain areas (e.g., Hyde 2004). Moreover, some of these neurological correlates suggest the evolutionarily adaptive nature of SI, which would be expected of any type of "intelligence" in Gardner's usage, and indeed responds to his primary opposition to a spiritual intelligence (Gardner 2000, p. 30).

Recent calls to validate SI as a construct and congruent with an "intelligence" (e.g., Atroszko et al. 2021; Skrzypińska 2021) have raised questions about one of the most

used measures of SI, and, indeed have suggested that "it is possible that SI is not a generable ability but rather that what is conceptualized currently as a particular component of SI are unique and correlated variables" (Atroszko et al. 2021, p. 3601). However, the failure of one model to stand up to rigorous testing does not necessarily invalidate others. It is important, therefore, to take a wider view of the models of SI that have been developed and the research substantiating their usefulness and the degree to which they assess something that meets Gardner's (1999, 2000) criteria for an intelligence. The following section combines the theoretical models of SI with the research validating those models, including some studies comparing SI with EI, and showing the association of SI with the kinds of positive results and adaptability expected of an evolutionarily desirable trait. It is followed by a brief section on neurological correlates of SI.

2. Theoretical Frameworks and Research on Spiritual Intelligence

After the introduction of the idea of spiritual intelligence in the last century, the first theoretical frameworks began to be developed and operationalized through the validation of assessments. This section presents the development of different SI models in chronological order with emphasis on the two supported by the most empirical research.

2.1. Integrated Spiritual Intelligence Scale (ISIS)

To answer the question, what is spiritual intelligence, and in an attempt to identify an ecumenical model of SI, Amram (2007) developed a grounded theory of Spiritual Intelligence based on interviews with 71 people of different religious and spiritual orientations nominated by their associates as embodying their spiritual values in daily life, including a minimum of four interviews with people representing the following traditions: Buddhism, Christianity, Earth-Based (Shamanic and Pagan) paths, Hinduism (including Yogic traditions), Islam/Sufism, Judaism, Non-Duality, and Taoism. The majority were spiritual teachers recognized in their lineages (roshis, priests, rabbis, swamis, sheikhs, etc.). Employing a grounded theory method for analysis of the interview data (Glaser 1992; Glaser and Strauss 1967; Strauss and Corbin 1990), open coding identified individual properties demonstrated by participants (e.g., gratitude, joy, abundance, and appreciation of beauty), followed by axial coding to identify themes (e.g., love of life, which combined all the above). Selective coding identified higher-level themes, such as grace, which combined the themes of love of life, the sacred, and trust. Interviews continued until saturation was achieved, and the levels of significance for convergence of unprompted responses to neutrally worded questions were extremely high (the minimum accepted was 80%). The analysis produced seven major themes with subthemes universal across traditions considered to be the capacities that distinguish SI from other intelligences (Amram 2007; Appendix A):

1. *Consciousness*—Developed refined awareness and self-knowledge:
   - *Mindfulness*—knowing self and living consciously with clear intention and mindful, embodied awareness and presence;
   - *Trans-rational knowing*—transcending rationality through synthesis of paradoxes and using various states/modes of consciousness (e.g., meditation, prayer, silence, intuition, and dreams) to access knowledge;
   - *Practice*—using a variety of practices to develop and refine consciousness or spiritual qualities.

2. *Grace*—Living in alignment with the sacred, manifesting love for, and trust in life:
   - *Sacred*—living in alignment with the divine, a universal life force, nature, or one's true essential nature;
   - *Love of life*—reverence and cherishing of life based on gratitude, beauty, vitality, and joy;
   - *Trust*—hopeful/optimistic outlook based on faith or trust.

3. *Meaning*—Experiencing significance in daily activities through a sense of purpose and a call for service, including in the face of pain and suffering.
4. *Transcendence*—Going beyond the separate egoic self into an interconnected wholeness:
    - *Relational I-Thou*—nurturing relationships and community with acceptance, respect, empathy, compassion, loving-kindness, generosity, and I-Thou orientation;
    - *Holism*—utilize a systems perspective seeing the wholeness, unity, and the interconnections among diversity and differentiation.
5. *Truth*—Living in open acceptance, curiosity, and love for all creation (all that is):
    - *Acceptance*—forgive, embrace, and love what is, including the "negative" and shadow;
    - *Openness*—open heart and mind, open curiosity, including open respect for the wisdom of multiple traditions.
6. *Serenity*—Peaceful surrender to Self (Truth, God, Absolute, true nature):
    - *Peacefulness*—centered, equanimity, self-acceptance, self-compassion, and inner-wholeness.
    - *Egolessness*—letting go of persona to maintain humble receptivity, surrendering, and allowing what wants and needs to happen.
7. *Inner-Directedness*—Inner-freedom aligned in responsible wise action:
    - *Freedom*—liberation from conditioning, attachments and fears, manifesting courage, creativity, and playfulness;
    - *Discernment*—wisdom to know truth using an inner-compass (conscience);
    - *Integrity*—being/acting authentically, responsibly, and with alignment to one's values.

The resulting model and data were used to develop a validated instrument called the integrated spiritual intelligence scale (ISIS; Amram and Dryer 2008), with 83 self-report items scored on a 6-point Likert-type scale of frequency, and later a validated 45-item short form, available in both self-report and as a 360-assessment measure, similar to other competency models assessing motive- and trait-level qualities (e.g., McClelland 1973, 1987). ISIS features 22 subscales assessing separate SI capabilities related to Beauty, Discernment, Egolessness, Equanimity, Freedom, Gratitude, Higher-self, Holism, Immanence, Inner-wholeness, Intuition, Joy, Mindfulness, Openness, Practice, Presence, Purpose, Relatedness, Sacredness, Service, Synthesis, and Trust. These 22 subscales cluster into 5 domains: Consciousness, Grace, Meaning, Transcendence and Truth, which overlap with five of the seven major themes identified in the qualitative research. Sample items include:

Consciousness-Synthesis: I can hold as true and integrate seemingly conflicting or contradictory points of view;

Meaning-Service: In my daily life, I feel my work is in service to the larger whole;

Transcendence-Sacredness: I live in harmony with a force greater than myself—a universal life force, the divine, or nature—to act spontaneously and effortlessly;

Truth-Openness: I hold resentment towards those who have wronged me (reverse scored).

The overall internal consistency of the ISIS was high (Cronbach's alpha = 0.97), as was internal consistency of the domain scales (Cronbach's alpha range 0.84–0.95, M = 0.89). The internal consistency of the capability subscales was moderate to high (Cronbach's alpha range 0.62–0.88, M = 0.75).

The ISIS showed correlation with satisfaction with life (Amram and Dryer 2008). Furthermore, studies by other researchers, some of whom translated the ISIS into other languages, applied it in different cultural contexts and found it valid and reliable in Turkish (Söylemez et al. 2016) and Persian (Khodadady et al. 2012). Additionally, other studies using the ISIS also found it not only to be valid and reliable, but also correlated with a variety of positive outcomes in different cultural and religious contexts, including:

- Leadership effectiveness as rated by followers in the US (Amram 2009);

- Resilience among Christians in India (Narayanan and Jose 2011);
- Leadership effectiveness among Turkish managers as measured by financial performance of their organizations (Ayranci 2011);
- Job satisfaction among teachers in Iran (Yahyazadeh-Jeloudar and Lotfi-Goodarzi 2012);
- Work performance among nurses in Malaysia (Rani et al. 2013);
- Work satisfaction among employees in Slovenia (Koražija et al. 2016);
- Organizational performance as measured by return on assets and another financial outcome measure among banks in Pakistan (Malik and Tariq 2016);
- Mental health in India (Pant and Srivastava 2019);
- Life satisfaction and awe in China (Liu et al. 2021).

In some of the studies above that controlled for other established constructs, SI provided incremental predictive validity. For example, Naderi and Roushani (2011) surprisingly found that high scores on ISIS predicted death anxiety among Iranian women when controlling for social intelligence, which did not. Ayranci (2011) found SI to predict organizational financial performance of leaders, while emotional intelligence did not. Furthermore, Ayranci (2011) overcame the limitations of common-method bias and its halo-effect and found that self-reported spiritual intelligence was associated with improved organization financial performance, measured independently and objectively. Similarly, Malik and Tariq (2016) found that self-reported SI among bank employees predicted the bank's financial performance as measured by their return on assets and Tobin's Q.

Amram (2009) found the ISIS self-report measure of spiritual intelligence predicted leadership effectiveness ratings by outside observers even after controlling for personality (using the Five Factor Model 10-item personality inventory [TIPI]; Gosling et al. 2003) and Emotional Intelligence (Wong and Law 2002). Self-reported EI and SI showed moderate correlation (RS = 0.27), which might be expected since both constructs feature similar competencies, such as self-awareness (EI) and self-knowledge (SI), and emotional self-regulation (EI) and equanimity (SI). Additionally, Amram (2009) deployed 360-assessments of SI and EI, finding observer ratings of SI and EI each on their own to predict leadership effectiveness ratings from other observers. In analyzing the employee-assessment scores, EI alone explained 41% of leadership effectiveness while SI, on its own, explained 46% of leadership effectiveness. Combined, they explained 67% of leadership effectiveness. These results suggest that EI and SI complement each other and uniquely contribute to leadership effectiveness, with SI providing differential and incremental predictive validity.

2.2. Spiritual Intelligence Self-Report Inventory (SISRI-24)

King (2008), in a master's thesis, defined spiritual intelligence as "a set of mental capacities which contribute to the awareness, integration, and adaptive application of the nonmaterial and transcendent aspects of one's existence, leading to such outcomes as deep existential reflection, enhancement of meaning, recognition of a transcendent self, and mastery of spiritual states" (p. 54) based on a literature review. Subsequent research by King and DeCicco (2009) proposed a four-factor model for spiritual intelligence with capacities for: critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion. From this model they developed and validated the spiritual intelligence self-report inventory (SISRI-24) with high internal reliability, test-retest reliability, and scale validity.

King and DeCicco (2009) found that the SISRI-24 more closely related to intrinsic than extrinsic religiosity, and that the SISRI-24 Personal Meaning Making subscale was associated with greater personal meaning, while the SISRI-24 Conscious State Expansion subscale was correlated with mystical experiences. Similar to Amram (2009)'s findings, King et al. (2012) found a moderate correlation of RS=.4 between SI and EI when using the SISRI-24.

The SISRI-24 is arguably the most used of the SI inventories, perhaps for the convenience of its short length, and it has been translated into other languages and used

cross-culturally. Studies by other researchers applying the SISRI-24 found it to be valid, reliable, and associated with, among other positive outcomes:

- Increased resilience and lowered perceived stress in Iran (Khosravi and Nikmanesh 2014);
- Greater mindfulness and transformational leadership among higher public education leaders in the US (Gieseke 2014);
- Higher EI, psychological ownership, caring behaviors, and reduced burnout among nurses in Malaysia (Kaur et al. 2015);
- Improved work performance among software company employees in India (Anbugeetha 2015);
- General health and happiness among university students in Iran (Amirian and Fazilat-Pour 2016);
- Student adjustment in Malaysia (Mansouri et al. 2016);
- Enhanced metapersonal self-construal in Hong Kong (Chan and Siu 2016; but see below);
- Greater self-care among hemodialysis patients in Iran (Fashi et al. 2017).

However, recently Atroszko et al. (2021) attempted to determine whether a "general factor of spiritual intelligence" could be identified as a psychological construct by administering the SISRI to a large (N = 833) sample of Polish adults. Their assumptions were that the SISRI-24 model has a hierarchical structuring, with 4 first-order factors (critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion, the original four factors of King and DeCicco's (2009) model loading onto a single second-order factor, "general SI" pp. 3598–99). Their results showed no support for a single factor of SI, and that previous studies (Antunes et al. 2018; Chan and Siu 2016)—including the original one by King and DeCicco (2009)—were "highly problematic" (Atroszko et al. 2021, p. 3591) in not showing strong support for the four-factor model underlying the SISRI-24. Specifically, Atroszko and colleagues found that development of the original scale (King 2008) did not follow the assumptions for King's four-factor model, and that initial analysis produced six factors. King then removed one factor composed of all reverse-coded items, despite methodological reasons for retaining such items, and provided a nonsensical reason for doing so (Atroszko et al. 2021, p. 3595). In addition, a number of items measured more than one factor and were later removed, though King (2008) claimed that the four-factor structure was "very well-supported" in the original 84-item pool (p. 129). Atroszko et al. (2021) further criticized the process of creating the original item pool and its shaping, showing that "the measurement is not fully derived from the theory but is molded ad hoc based on data" and that the theory never showed that the four-factor model measures a single higher-order factor of SI (p. 3595). They asserted that subsequent adaptations of the SISRI reflect these developmental problems, and that their testing of King's hypothesis gave an inadmissible solution, leading Atorszko, et al. to conclude that "to date, no data support a single factor of SI measured by SISRI-24 . . . and that measurement with this scale is highly problematic" (p. 3601).

Whether a single, universal factor exists may or may not be valid or useful in considering SI as an "intelligence," these problems with the SISRI-24 model are worth further investigation, especially relative to the ISIS (Amram and Dryer 2008), which was developed in a very different way, as well as some other instruments that have been used in other cultural contexts.

2.3. Other Measurements of Spiritual Intelligence

The felt need for a spiritual intelligence construct is demonstrated by the many attempts to create one specific to various cultures or arising from particular cultural contexts in relation to the two above, per the call for SI among American Indigenous peoples (Doetzel 2018). This section presents some of those published in academic journals.

A 29-item Spiritual Intelligence Questionnaire was developed and normed against university student populations in Iran (Abdollahzadeh et al. 2009a). Test reliability initially was 0.87 Cronbach's alpha, but the revised version garnered a score of 0.89. Factor analysis produced two major factors, "understanding and communicating with the source of the uni-

verse" and "spiritual life or reliance on the inner core" (n.p.). Both factors were correlated with Amram and Dryer's (2008) ISIS and demonstrated convergent validity. Using this instrument, Mohammadyari (2012) found that Iranian children of parents with greater levels of spiritual intelligence had higher levels of mental health, and Bolghan-Abadi et al. (2014) found this measure of SI to predict quality of life among university students in Iran.

Significant research on SI has been conducted in Muslim contexts and perhaps using scales developed especially for those cultures. For example, some studies have spiritual intelligence scales developed in Muslim cultures about whose development little published information is available (e.g., Bagheri et al. 2011; Faribors et al. 2010; Karimi-Moonaghi et al. 2015), but which have been reported to show correlations with positive, successful outcomes in problem-solving professional contexts. Recently, an Islamic Spiritual Intelligence Measure (ISIM) was recently derived from factor analysis using a sample of Muslim postgraduate students in Malaysia (Jumahat et al. 2015) with eight factors: God consciousness, trust in God, repentance, patience, truthfulness, fairness, integrity, and continuous learning. And Hanefar et al. (2016) synthesized an SI model from Islamic and Western perspectives, notably those of Al-Ghazali and Langgulung, consisting of seven themes: meaning/purpose in life, consciousness, transcendence, spiritual resources, self-determination, reflection-soul purification, and spiritual coping with obstacles.

Two spiritual intelligence scales have been developed in India with reference to Hindu philosophy and values. The better known Dhar and Dhar (2010) instrument is a 53-item Spiritual Intelligence Scale standardized on business executives that features six subscales: benevolence, modesty, conviction, compassion, magnanimity, and optimism. Split-half reliability corrected for full length using the Spearman-Brown formula on data from the test sample of 323 participants yielded a reliability coefficient of 0.98. It has been used in several educational and workplace settings in India on youth and adults (e.g., Dhami et al. 2021; Sharma 2017a, 2017b; Ghosh 2021; Vikas 2020) with findings that support the contribution of SI to various positive outcomes. Kumar and Mehta (2011) developed a 20-item spiritual intelligence scale consisting of six factors: purpose in life, human values, compassion, commitment towards humanity, understanding self and conscience with a Cronbach alpha and split-half reliability of 0.78. They used it and a measure of EI to assess 450 tenth-grade adolescent boys for educational adjustment and found both SI and EI to predict educational adjustment. Erduran-Tekin and Halil (2019) used the Kumar and Mehta Scale for Spiritual Intelligence (SSI), originally developed from Indian philosophy, adapting it into Turkish and confirmed it to have a six-factor structure showing internal consistency and reliability and was associated with greater meaning in life.

Feng et al. (2019) argued that the spiritual intelligence of those influenced by Confucianism, Taoism, and Buddhism in China (specifically) should differ from Western models of SI (p. 1319). They interviewed and surveyed 50 people engaged in secular occupations, some of whom were nominated as "individuals who did meaningful things" (p. 1319) to collect behavioral event statements, which were sorted by expert raters, to produce a Spiritual Intelligence Scale comprising 34 items rated on a 5-point Likert-type scale administered through an on-line survey to students and employees in mainland China (N = 605). Factor analysis produced a three-factor model comprising Identification of Meaning (individuals determine the positive effects of their own experience and determine positive effects through perceptions of others and the outside world), Connection of Meaning (commonalities between different communities), and Realization of Meaning (realization of society, which apparently means self-sacrifice for the greater good, and realization of nature; p. 1322). The secular emphasis of the authors' approach throughout the conduct of their research runs counter to the burgeoning of Chinese folk religions since the relaxation of state sanctions regulating religion (e.g., Chau 2006; Dean 1993; Yang 2010, 2012), including the revival of ancestor worship, shamanism, etc. (Bambridge 2007) and estimates that over 85% of the Chinese people believe in the supernatural (Zhao and Yao 2010, p. 9). It seems likely that Feng et al. (2019) were attempting to create a secular version of SI congruent

with the government's stance but not necessarily representative of the transcendent SI qualities many Chinese people, especially spiritual exemplars, may exhibit.

Finally, Latvian researchers (Grasmane et al. 2022) produced a children's spiritual intelligence scale with the following constructs: creation and awareness of personal meaning, self-understanding, mastery of self-control, awareness of personal authenticity and uniqueness, and social mastery. Their model was based on earlier models of SI, research on children's spirituality, EI, and integral theory. Expert review and piloting with young children improved the face validity of items, which were later tested on primarily male children in grades 1–4 in Lativia. Factor analysis and tests for internal consistency produced the final 23-item scale with acceptable psychometric qualities.

2.4. Other Considerations

Whichever measures are used in different applications, SI has largely been shown to be predictive of positive outcomes, and evidence suggests it is not equivalent to EI, though the two constructs overlap in some areas, such as self-awareness and self-knowledge. The research is too extensive to be covered here, but it is worth noting that even within an existential framework, some puzzling findings have arisen. For example, similar to Naderi and Roushani's (2011) findings with ISIS, the SISRI-24 showed a positive correlation with death anxiety: Polemikou and Vantarakis (2019) found higher scores on the SISRI-24 associated with increased death anxiety as well as dissociation with posttraumatic stress disorder in Greek first responders, and Sharif et al. (2021) found a positive correlation between SI and death anxiety among Iranian veterans. Based on prior research on the association between spirituality and lower death anxiety (Taghiabadi et al. 2017), one might have expected that higher SI scores should correlate with lower death anxiety, and that is indeed what Nia et al. (2017) found: high scores on the SISRI-24 were associated with lower death anxiety and higher spiritual wellbeing among Iranian veterans.

Furthermore, Munawar and Tariq (2018) found a negative correlation between life satisfaction and the "meaning" aspect of SI among elderly Pakistani Muslims, leading the authors to suggest that possessing meaning and searching for meaning may make people momentarily aware of living a purposeless life, though many continue to believe their lives are purposeful and meaningful (p. 790). In the same study, life satisfaction was negatively correlated with consciousness, grace, meaning, truth, and transcendence. Nevertheless, the authors asserted that "spiritual intelligence can be applied to every aspect of daily life to experience greater meaning and well-being by exercising abilities such as mindfulness, presence, and equanimity even when an individual is experiencing pain and suffering" (p. 792).

Many studies have examined SI outside of an explicitly spiritual or existential context, and they also have shown mixed results. For example, researchers found significant positive correlation between scores on the SISRI-24 and employees' organizational citizenship behaviors (willingness to contribute discretionary effort) but no significant relationship to the quality of their work performance in Islamic banks in Indonesia (Muhdar et al. 2014). Similarly, Fesharaki (2019) found positive correlations between high SISRI-24 scores and self-efficacy and passion for inventing and founding a new venture among Iranian entrepreneurial owner-managers, but not with the passion for developing the sustainability of a business. Siswanti et al. (2018) found SI to have an insignificant effect on leadership competence, especially when compared to EI and social competency in a sample of 900 respondents of the Makassar Airport Authority.

Interestingly, a study (O'Sullivan and Lindsay 2022) of Aotearoa New Zealand university students showed that SI was significantly associated with increased resilience and reduced depression and stress, but not anxiety; however, resilience scores fully mediated the combined depression, anxiety and stress scores. Therefore, it may only be that in some domains SI "acts as a moderator in many situations but is not directly influential" (p. 15). Their findings might explain a lot of the more equivocal results in other studies (e.g., Oyewunmi et al. 2021; Giannone and Kaplin 2020; Moafi et al. 2021; Snelgar et al. 2017).

Clearly more research is needed to examine these relationships, especially in light of questions about the SISRI-24 model (King and DeCicco 2009), and what also may be language and cultural differences. For instance, the SISRI items contain words like "consciousness" and "meaning" in English, which may be difficult to render comparably in different languages and cultures, and some cultures value social desirability and conformity more than others, potentially confounding attempts at cross-cultural, cross-lingual comparisons. Even the titles of SI inventories may produce social desirability bias, always a problem in any self-report inventory. Further, since a large number of the published correlational studies involve Islamic populations and relatively fewer studies have assessed the validity of SI models in Buddhist, Taoist, Latinx and Indigenous cultures, much remains to be done to assess the universality of any of these models of SI, though it is possible that the Amram and Dryer (2008) model, since it was intentionally developed using an ecumenical, exemplar (behavioral event) sample may provide the most rational starting place.

2.5. Developing Spiritual Intelligence

Gardner's (1995, 1999) approach to the intelligences, like McClelland's (1973, 1987) identification of motive- and trait-level competencies that predict superior performance, seems to refer mainly to the strength of innate traits differentially distributed across the population. However, even traits can be developed, just as native cognitive intelligence (IQ), for example, can be honed by training in logic, strategy, analogies, and other forms of reasoning and problem-solving. So, too, can Spiritual Intelligence, at least as assessed by some of the instruments above.

For example, both Amram and Dryer (2008) and King and deCicco (2009) found that SI was significantly correlated with age in their original survey samples, so that the more mature a person, the greater the likelihood of higher SI. However, the results of some independent studies have called this relationship into question (e.g., Chan and Siu 2016; Mohammadyari 2012; Shabani et al. 2010; Sharma 2017a). Nevertheless, few studies have examined this relationship over a widely age-varied population. Even less research has been conducted on the relationship between general education and SI, but Mohammadyari (2012) found that parents with higher education scored higher on SI than those with primary and secondary education.

Specific training in SI constructs produces measurable differences. In healthcare, some researchers, most of them in Iran, have tried to develop SI as way to help people cope with existential challenges. For example, two independent studies (Hosseinpour et al. 2020; Pasyar et al. 2020) showed that training in Spiritual Intelligence and subsequent assessment using Amram and Dryer's (2008) ISIS and King's SISRI-24 (King and DeCicco 2009), respectively, have a positive effect on hope and life expectancy among the chronically ill. Others have trained care providers in SI to work with patients. Riahi et al. (2018) found that SI training improved nurses' competence in spiritual care in critical care units, which in turn improved patient quality of life. And SI training interventions have been shown to improve the quality of work life among healthcare providers (Heydari et al. 2017; Heydari et al. 2018). A metanalysis (Sharifinia et al. 2022) of seven studies comprising 512 nurses and nursing students showed that those who received SI training demonstrated higher SI scores at two- and four-week follow-up compared to controls, and that the experimental group scored significantly higher in communication skills, job satisfaction, and spiritual care competence and significantly lower in overall stress compared to controls. Significantly higher job satisfaction was reported at two-month follow-up by those who had had SI training.

Research conducted outside a healthcare setting examined whether mental health generally could be improved through SI training. In a study (Charkhabi et al. 2014) of the effect of SI training on the mental health of Iranian high school students, the intervention decreased interpersonal sensitivity, somatization, obsessive-compulsive behavior, depression, anxiety, aggression, phobia, paranoid ideation, and psychoticism in the experimental group compared with controls.

Thus, it appears that like other intelligences, innate SI capacities, which theoretically should be differentially distributed in a population like variations in IQ, can nevertheless be cultivated to some extent, especially with focused training, but it would be helpful to determine the relationship between SI, maturity, and general education.

2.6. The Biological Basis for Spiritual Intelligence

Spiritual neuroscience is a new area of study that examines religious and spiritual experiences and behavior as correlates of brain function, including alleging that this connection indicates an evolutionary basis for spirituality—i.e., that spirituality serves human adaptation. Indeed, some spiritual qualities appear to have genetic roots, presented below. Reducing spirituality to biological structures is controversial, but the growing body of research on the effects of spiritual practices on brain functioning and development indicates that such correlations do exist. It is impossible within the scope of this paper to present even a fraction of this literature, but some examples are provided to show support for this requisite of Gardner's (1999) for a type of intelligence. This missing physiological criterion was one of the main reasons Gardner rejected the notion of SI (Gardner 1999, 2000)—aside from his personal prejudice (Gardner 1999, pp. 46–47)—but since then considerable research has identified just such neurological and evolutionary (genetic) correlates.

Rather than a single "God spot" in the brain, as was posited earlier (e.g., Delio 2003; Joseph 2001; Zohar and Marshall 2000), several neural networks, structures, and genetic components (e.g., Hamer 2004) seem to be involved. Grafman et al. (2020) concluded that religious or spiritual cognition involves a complex interplay among specific regions in the brain. Ferguson et al. (2022) found that spirituality maps to a neural brain circuit in the periaqueductal gray region.

Regarding some of the most universal capacities associated with the various SI models above, such as an orientation to compassion and interrelatedness, the mirror neuron system has provided a biological basis for the capacity for empathy and relatedness (Gallese 2003, 2005). A meta-analysis of 80 studies suggested that empathy is mediated using six spatially distinct activation clusters in the medial part of the frontal lobe dorsal to the intercommissural plane (Seitz et al. 2006). Empathy and compassion cultivated through particular spiritual practices change brain activity and structure. Lutz et al. (2004) found that a long-term compassion and loving-kindness meditation practice is associated with altered resting electroencephalogram patterns, suggesting that the development of SI relatedness qualities involves temporal integrative mechanisms and may induce short- and long-term neurological changes. Furthermore, they found specific brain area activation during loving-kindness and compassion meditation among such trained meditators.

Similarly various parts of the brain have been associated with transcendent experiences (e.g., Delio 2003; Joseph 2001; Newberg 2010, 2018; Persinger et al. 2010). Borg et al. (2003), using positron emission tomography (PET) scans, found an inverse correlation between serotonin receptor density and experiences of self-transcendence. Riveros and Immordino-Yang (2021) argued that the neural underpinnings of transcendent thought capacities are present and develop as adolescents actively make meaning, rely on supportive social relationships, and process deeper reflections.

Genetics may also play a part in SI. Hamer (2004) found a gene contributing to the self-reported value of self-transcendence from his study of same-sex siblings. Kirk et al. (1999) found genetic factors to be important in influencing self-transcendence based on a study of Australian twins.

As indicated above, training affects neuroplasticity, such that SI practices produce material changes in the brain in addition to behavioral changes. Robertson (2022) found significant neuronal electrical effects from the Christian practice of Centering Prayer, including a cumulative effect after 5 weeks of practice that enabled practitioners to perform challenging tasks with less mental strain than non-practitioners. Dentico et al. (2018) demonstrated an acute effect of meditation training on the waking and sleeping brain in low and fast waking EEG oscillations for long-term meditators as compared to meditation-naïve partici-

pants. Using several brain imaging technologies, including EEG, fMRI, SPECT, and PET, Leighton (2021) found significant neural activity patterns in the alpha current source density in the superior temporal gyrus and post central gyrus during religious prayer practices among Christians. A pilot study by Yousefzadeh et al. (2019) showed that even a 10-second Muslim prayer practice affects brain activity. Davidson et al. (2003) found that those who trained in mindfulness meditation exhibit significantly greater activity in the prefrontal cortex even while not in meditation compared to controls. Lazar et al. (2005) showed that a mindfulness meditation practice is associated with increased cortical brain thickness, with the right anterior insula, right middle and superior frontal sulci thicker among meditators compared to controls. In a review, Alexander et al. (2021) found that contemplative practices have neural correlates and result in positive emotions and cumulatively greater wellbeing, not only during practice but over time as well.

In summary, increasingly research links spiritual experiences and practices with the activation of associated neural pathways, which can lead to neuroplastic modification of specific brain structures. SI markers, such as compassion and self-transcendence, provide biological and genetic plausibility for Spiritual Intelligence as offering evolutionary advantages in addition to research demonstrating the adaptability and resilience SI provides for problem-solving in daily life.

3. Discussion

A growing body of research has focused on the construct of Spiritual Intelligence with several validated measures developed by different authors using different methods to produce a model and then validate it. The felt need for such a construct is evidenced by the emergence of more models specific to different cultures and populations, in addition to the first ones developed and initially used in cross-cultural research. Some of the SI measures have demonstrated incremental predictive validity even when controlling for other established constructs, such as personality, emotional intelligence, and social intelligence. SI has been shown to predict functioning and wellbeing in a variety of domains, producing valuable outcomes solving problems and creating products that are valuable within different cultural setting, thus meeting Gardner's (1983) essential defining characteristic for intelligence. It is possible, especially now that so many related SI models exist—along with research on their predictive validity for positive outcomes compared to and controlling for EI factors—that refinement may lead to a universal SI model.

The problem remains of the mixed results within and across SI measures, raising the question whether all the measures of SI are assessing a single or slightly different constructs—a situation similar to that of EI, which is represented by several validated measures each with their own predictive validity. To further understanding of Spiritual Intelligence, it would be interesting to find the correlation between these different, independently validated SI measures to help discern to what extent they are measuring the same thing.

Clearly some of the puzzling and contradictory results found in some studies need more exploration, particularly with reference to differentiating EI and SI. It is impossible to know, at this point, which results may be a factor of cultural differences, a fault of the way some models or assessments were developed and/or translated or overlap with EI models. Behavior- or performance-based assessments of SI are conceptually challenging; however, such subjective internal phenomena as motives and traits have been successfully assessed through behavioral indicators at the level of predictive statistical validity (e.g., McClelland 1973, 1987). Some SI instruments, such as ISIS (Amram and Dryer 2008). are offered in 360-degree versions for others to rate an individual's SI based on behavioral indicators, though the extent to which self-assessment and the ratings of others are valid is not yet well established.

Supporting SI as a separate intelligence is research using different SI models that show its differential distribution across individuals, its development through training and its prediction of positive outcomes, when controlling for social intelligence, emotional

intelligence, and personality, among other factors. It also seems to represent an adaptive advantage, which is supported by research in the emerging field of spiritual biology demonstrating a link between spiritual practice and the development of neuronal pathways, likely to leading to maturation and growth of the practitioner's spiritual intelligence capacities. This is matched by some evidence of a genetic component to SI. These hereditary and physiological structures, in addition to the adaptive advantage of SI for performance across a variety of domains, strongly suggest that SI is part of the human legacy evolutionarily. Indeed, this need not be too surprising, since spirituality and religion and the cultivation of their values as virtues have been a major and universal human preoccupation across all cultures and geographies, helping humans make sense of their life and their place in the cosmos, as well connect to the sacred and transcendent dimensions of their existence. In summary, in reviewing the literature on the construct of spiritual intelligence, although many questions worthy of further research remain, the growing body of research suggests that SI is deserving of being considered an intelligence.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Table A1. Major Themes and Sub-Themes Presented by Participants from Each Tradition (N = 71).

Theme	Bud [a]	Chr [b]	Int [c]	Hin [d]	Isl [e]	Jew [f]	ND [g]	Tao [h]	Yog [i]	Ear [j]	Total
Consciousness	7	7	20	5	5	7	5	4	5	6	71
Transrational	3	7	16	4	4	4	5	4	4	6	57
Mindfulness	7	7	20	5	4	6	5	4	5	6	69
Practice	7	7	18	5	5	7	5	4	5	6	69
Grace	7	7	19	5	5	7	5	4	5	6	70
Sacred	5	7	17	4	5	7	3	2	5	5	60
Love	7	7	15	5	4	7	5	4	5	6	65
Trust	6	7	14	4	5	5	5	2	5	6	59
Meaning	7	7	18	5	5	6	5	4	5	6	68
Transcendence	7	7	20	5	5	7	5	4	5	6	71
Holism	7	7	17	3	5	5	5	3	3	6	61
I-Thou	7	7	20	5	5	7	4	4	5	6	70
Truth	6	7	20	5	5	7	5	4	5	6	70
Acceptance	6	7	18	4	5	7	5	3	5	6	66
Openness	6	7	18	5	5	5	3	4	4	6	63
Serenity	7	7	20	5	5	7	5	4	5	6	71
Peacefulness	7	7	20	5	5	7	4	3	5	6	69
Egolessness	7	7	17	5	4	5	4	4	5	5	63
Inner-Directedness	7	7	20	4	5	6	5	4	5	6	69
Freedom	7	7	20	3	4	4	5	4	5	6	65
Discernment	5	7	17	4	5	5	2	3	4	6	58
Integrity	6	7	15	3	5	5	4	3	5	6	59
Total Participants	7	7	20	5	5	7	5	4	5	6	71

[a] Buddhist, [b] Christian, [c] Integrative, [d] Hindu, [e] Islamic, [f] Jewish, [g] Non-dual, [h] Taoist, [i] Yogi, [j] Earth-Based.

References

Abdollahzadeh, Hassan, M. Bagherpoor, S. Mehrabi, and M. Lotfi. 2009a. The 29-item Spiritual Intelligence Questionnaire. In *Spiritual Intelligence: Concepts, Measurements and Its Applications*. Tehran: Ravansanji.

Alexander, Rebecca, Oriana R. Aragón, Jamila Bookwala, Nicolas Cherbuin, Justine M. Gatt, Ian J. Kahrilas, Niklas Kästner, Alistair Lawrence, Leroy Lowe, Robert G. Morrison, and et al. 2021. The neuroscience of positive emotions and affect: Implications for cultivating happiness and wellbeing. *Neuroscience & Biobehavioral Reviews* 121: 220–49.

Amirian, Mohammad-Elyas, and Masoud Fazilat-Pour. 2016. Simple and multivariate relationships between spiritual intelligence with general health and happiness. *Journal of Religion and Health* 55: 1275–88. [CrossRef] [PubMed]

Amram, Yosi. 2007. The Seven Dimensions of Spiritual Intelligence: An Ecumenical Grounded Theory. Paper presented at the 115th Annual Conference of the American Psychological Association, San Francisco, CA, USA, August 17–20.

Amram, Yosi, and Christopher Dryer. 2008. The Integrated Spiritual Intelligence Scale (ISIS): Development and preliminary validation. Paper presented at the 116th Annual (August 2008) Conference of the American Psychological Association, Boston, MA, USA, August 14–17.

Amram, Joseph Yosi. 2009. The Contribution of Emotional and Spiritual Intelligences to Effective Business Leadership. Doctoral dissertation, Institute of Transpersonal Psychology (Sophia University), Palo Alto, CA, USA.

Anbugeetha, Duraiswami. 2015. An analysis of the Spiritual Intelligence Self Report Inventory (SISRI). *International Journal of Management* 6: 25–36.

Antunes, Roque R., Ana Paula Silva, and Jorge Oliveira. 2018. Spiritual intelligence self-assessment inventory: Psychometric properties of the Portuguese version of SISRI-24. *Journal of Religion, Spirituality & Aging* 30: 12–24.

Atroszko, Paweł A., Katarzyna Skrzypińska, and Julia M. Balcerowska. 2021. Is there a general factor of spiritual intelligence? Factorial validity of the Polish adaptation of Spiritual Intelligence Self-Report Inventory. *Journal of Religion and Health* 60: 3591–605. [CrossRef]

Ayranci, Evren. 2011. Effects of top Turkish managers' emotional and spiritual intelligences on their organizations' financial performance. *Business Intelligence Journal* 4: 9–36.

Bagheri, Fariborz, Fatemeh Akbarizadeh, and Hamidreza Hatami. 2011. The relationship between spiritual intelligence and happiness on the nurse staff of the Fatemeh Zahra Hospital and Bentolhoda Institute of Bushehr City. *Indian Streams Research Journal* 14: 256–63.

Bambridge, William Sims. 2007. New religion and irreligion. In *The SAGE Handbook of the Sociology of Religion*. Edited by James A. Beckford and Jay N. Demerath. Thousand Oaks: Sage, pp. 248–65.

Bolghan-Abadi, Mustafa, Fatemeh Ghofrani, and Mohammad Saeed Abde-Khodaei. 2014. Study of the spiritual intelligence role in predicting university students' quality of life. *Journal of Religion and Health* 53: 79–85. [CrossRef]

Borg, Jacqueline, Bengt Andrée, Henrik Soderstrom, and Lars Farde. 2003. The serotonin system and spiritual experiences. *American Journal of Psychiatry* 160: 1965–69. [CrossRef]

Chan, Arita W. Y., and Angela F. Y. Siu. 2016. Application of the Spiritual Intelligence Self-Report Inventory (SISRI-24) among Hong Kong University students. *International Journal of Transpersonal Studies* 35: 1–12. [CrossRef]

Charkhabi, Morteza, Amin Mortazavi, Samaneh Alimohammadi, and Davoud Hayati. 2014. The effect of spiritual intelligence training on the indicators of mental health in Iranian students: An experimental study. *Procedia—Social and Behavior Sciences* 159: 355–58. [CrossRef]

Chau, Adam Yuet. 2006. *Miraculous Response: Doing folk Religion in Contemporary China*. Redwood City: Stanford University Press.

Davidson, Richard, Jon Kabat-Zinn, Jessica Schumacher, Melissa Rosenkranz, Daniel Muller, Saki F. Santorelli, Ferris Urbanowski, Anne Harrington, Katherine Bonus, and John F. Sheridan. 2003. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine* 65: 564–70. [CrossRef] [PubMed]

Dean, Kenneth. 1993. *Taoist Ritual and Popular Cults of Southeast China*. Princeton: Princeton University Press.

Delio, Ilia. 2003. Are we wired for God? *New Theology Review* 16: 31–43. [CrossRef]

Dentico, Daniela, David Bachhuber, Brady A. Riedner, Fabio Ferrarelli, Giulio Tononi, Richard J. Davidson, and Antoine Lutz. 2018. Acute effects of meditation training on the waking and sleeping brain: Is it all about homeostasis? *European Journal of Neuroscience* 48: 2310–21. [CrossRef]

Dhami, Manisha, Seema Sharma, and Tejpreet Kaur Kang. 2021. A relational analysis of mental health and spiritual intelligence among youth: A new paradigm. *Indian Journal of Positive Psychology* 12: 314–17.

Dhar, Santosh, and Upinder Dhar. 2010. *Spiritual Intelligence Scale*. Agra: National Psychological Corporation.

Doetzel, Nancy-Angel. 2018. Cultivating spiritual intelligence: Honoring heart wisdom and First Nations indigenous ways of knowing. *Interchange* 49: 521–26. [CrossRef]

Elkins, David N., L. James Hedstrom, Lori L. Hughes, J. Andrew Leafe, and Cheryl Saunders. 1988. Toward a humanistic-phenomenological spirituality: Definition, description, and measurement. *Journal of Humanistic Psychology* 28: 5–18. [CrossRef]

Emmons, Robert. 2000. Is spirituality an intelligence? Motivation, cognition and the psychology of the ultimate concern. *International Journal for the Psychology of Religion* 10: 3–26. [CrossRef]

Erduran-Tekin, Özge, and Ekşi Halil. 2019. Adapting the scale for spiritual intelligence to Turkish. *Spiritual Psychology and Counseling* 4: 123–41. [CrossRef]

Faribors, Bagheri, Akbarizadeh Fatemeh, and Hatami Hamidreza. 2010. The relationship between nurses' spiritual intelligence and happiness in Iran. *Precedia—Social and Behavioral Sciences* 5: 1556–61. [CrossRef]

Fashi, Fatemeh Merati, Behnam Khaledi-Paveh, Rostam Jalali, and Amir Hossein Hashemian. 2017. Relationship between spiritual intelligence and self-care of hemodialysis patients. *Global Journal of Health Science* 9: 24–36. [CrossRef]

Feng, Ming, Xue-Yuan Xiong, and Jin-Jing Li. 2019. Spiritual Intelligence Scale—Chinese Form: Construction and initial validation. *Current Psychology* 38: 1318–27. [CrossRef]

Ferguson, Michael A., Frederic L. Schaper, Alexander Cohen, Shan Siddiqi, Sarah M. Merrill, Jared A. Nielsen, Jordan Grafman, Cosimo Urgesi, Franco Fabbro, and Michael D. Fox. 2022. A neural circuit for spirituality and religiosity derived from patients with brain lesions. *Biological Psychiatry* 91: 380–88. [CrossRef] [PubMed]

Fesharaki, Farzad. 2019. Entrepreneurial passion, self-efficacy, and spiritual intelligence among Iranian SME owner–managers. *Psychological Studies* 64: 429–35. [CrossRef]

Ford, Martin E., and Marie S. Tisak. 1983. A further search for social intelligence. *Journal of Educational Psychology* 75: 196. [CrossRef]

Gallese, Vittorio. 2003. The roots of empathy: The shared manifold hypothesis and the neural basis of intersubjectivity. *Psychopathology* 36: 171–80. [CrossRef]

Gallese, Vittorio. 2005. Being like me: Self-other identity, mirror neurons, and empathy. In *Perspectives on Imitations: From Neuroscience to Social Science: Vol. 1: Mechanisms of Imitation and Limitation in Animals*. Edited by Susan Hurley and Nick Chater. Cambridge: MIT Press, pp. 101–18.

Gardner, Howard. 1983. *Frames of Mind: The Theory of Multiple Intelligences*. New York: HarperCollins.

Gardner, Howard. 1995. *Leading Minds: An Anatomy of Leadership*. New York: HarperCollins.

Gardner, Howard. 1999. *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York: Basic Books.

Gardner, Howard. 2000. A case against spiritual intelligence. *International Journal for the Psychology of Religion* 10: 27–34. [CrossRef]

Ghosh, Soumita. 2021. Status of workplace spiritual intelligence among secondary school teachers. *ITALIENISCH* 11: 276–87. Available online: http://www.italienisch.nl/index.php/VerlagSauerlander/article/view/116 (accessed on 1 August 2022).

Giannone, Derek A., and Daniel Kaplin. 2020. How does spiritual intelligence relate to mental health in a Western sample? *Journal of Humanistic Psychology* 60: 400–17. [CrossRef]

Gieseke, Amy R. 2014. The Relationship between Spiritual Intelligence, Mindfulness, and Transformational Leadership among Public Higher Education Leaders. Doctoral dissertation, Northeastern University, Boston, MA, USA.

Glaser, Barney. 1992. *Basics of Grounded Theory Analysis*. Mill Valley: Sociology Press.

Glaser, Barney, and Anselm L. Strauss. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Mill Valley: Sociology Press.

Goleman, Daniel. 2006. *Social Intelligence: The New Science of Human Relationships*. Sydney: Bantam.

Gosling, Samuel D., Peter J. Rentfrow, and William B. Swann. 2003. A very brief measure of the Big-Five personality domains. *Journal of Research in Personality* 37: 504–28. [CrossRef]

Grafman, Jordan, Irene Cristofori, Wanting Zhong, and Joseph Bulbulia. 2020. The neural basis of religious cognition. *Current Directions in Psychological Science* 29: 126–33. [CrossRef]

Grasmane, Ina, Vitālijs Raščevskis, and Anita Pipere. 2022. Primary validation of Children Spiritual Intelligence Scale in a sample of Latvian elementary school pupils. *International Journal of Childrens Spirituality* 27: 97–112. [CrossRef]

Halama, Peter, and Michal Striženec. 2004. Spiritual, existential or both? Theoretical considerations on the nature of "higher" intelligences. *Studia Psychologica* 46: 239–53.

Hamer, Dean H. 2004. *The God Gene: How Faith is Hardwired into Our Genes*. New York: Anchor.

Hanefar, Shamsiah Banu, Che Zarrina Sa'ari, and Saedah Siraj. 2016. A synthesis of spiritual intelligence themes from Islamic and Western philosophical perspectives. *Journal of Religion and Health* 55: 2069–85. [CrossRef]

Heydari, Abbas, Ali Meshkinyazd, and Parvaneh Soudmand. 2017. The effect of spiritual intelligence training on job satisfaction of psychiatric nurses. *Iranian Journal of Psychiatry* 12: 128.

Heydari, Abbas, Mohammad Reza Fayyazi Bordbar, Kowkab Basiri Moghadam, and Meshkinyazd Ali. 2018. Effect of spiritual intelligence training on perceived stress in a psychiatric nurse. *International Journal of Medical Research and Health Sciences* 7: 6–10.

Hill, Peter C., and Kenneth I. Pargament. 2003. Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist* 58: 64–74. [CrossRef] [PubMed]

Hinterkopf, Elfie. 1994. Integrating spiritual experiences in counseling. *Counseling and Values* 38: 165–75. [CrossRef]

Hitzhusen, Gregory E. 2004. Understanding the role of spirituality and theology in ourdoor environmental education: A mixed-method characterization of 12 Christian and Jewish outdoor programs. In *Research in Outdoor Education*. Edited by Karen Paisley, Camille J. Bunting, Anderson B. Young and Kelly Bloom. Cortland: Coalition for Education in the Outdoors, vol. 7, pp. 39–56.

Hosseinpour, S. N., Kh Nooryan, Rozina Abbasi Larki, Hamid Reza Ghafarian Shirazi, and Mohammad Zoladl. 2020. The effect of spiritual intelligence training on hope in patients with chronic kidney disease undergoing heodialysis: A randomized clinical trial study. *Journal of Clinical Care and Skills* 1: 121–26. [CrossRef]

Hyde, Brendan. 2004. The plausibility of spiritual intelligence: Spiritual experience, problem solving and neural sites. *International Journal of Children's Spirituality* 9: 39–52. [CrossRef]

Joseph, Rhawn. 2001. The limbic system and the soul: Evolution and the neuroanatomy of religious experience. *Zygon* 36: 105–36. [CrossRef]

Jumahat, Tajulashikin, Benaouda Bensaid, Mohamad Sahari Nordin, Ainol Madziah Zubairi, Azam Othman, and Ahmad Faizuddin. 2015. Preliminary exploration of Islamic Spiritual Intelligence Measure (ISIM) with special reference to Islamic worldview and *Asmaul Husna* (divine names). Paper presented at the International Conference on the Application of Asmaul Husna in Innovation (ICAH) 2015, Kuantan, Malaysia, November 2–4; pp. 155–65.

Karimi-Moonaghi, Hossein, Akram Gazrani, Saeed Vaghee, Hassan Gholami, Amir Reza Salehmoghhadam, and Raheleh Gharibnavaz. 2015. Relation between spiritual intelligence and clinical competency of nurses in Iran. *Journal of Nursing and Midwifery Research* 20: 665–69. [CrossRef] [PubMed]

Kaur, Devinder, Murali Sambasivan, and Naresh Kumar. 2015. Impact of emotional intelligence and spiritual intelligence on the caring behavior of nurses: A dimension-level exploratory study among public hospitals in Malaysia. *Applied Nursing Research* 28: 293–98. [CrossRef]

Khodadady, Ebrahim, Atefeh Taheryan, and Armin Tavakoli. 2012. Validating the Persian Integrated Spiritual Intelligence Scale within an Islamic context. *Ilahiyat Studies: Journal on Islamic and Religious Studies* 3: 247–74. [CrossRef]

Khosravi, Masoumeh, and Zahra Nikmanesh. 2014. Relationship of spiritual intelligence with resilience and perceived stress. *Iranian Journal of Ppsychiatry and Behavioral Sciences* 8: 52–56.

Kimball, Cynthia N., Kaye V. Cook, Chris J. Boyatzis, and Kathleen C. Leonard. 2016. Exploring emerging adults' relational spirituality: A longitudinal, mixed-methods analysis. *Psychology of Religion and Spirituality* 8: 110–18. [CrossRef]

King, David Brian. 2008. Rethinking Claims of Spiritual Intelligence: A definition, Model, & Measure. Masters' thesis, Trent University, Peterborough, ON, Canada.

King, David B., and Teresa L. DeCicco. 2009. A viable model and self-report measure of spiritual intelligence. *The International Journal of Transpersonal Studies* 28: 68–85. [CrossRef]

King, David B., Constance A. Mara, and Teresa L. DeCicco. 2012. Connecting the spiritual and emotional intelligences: Confirming an intelligence criterion and assessing the role of empathy. *The International Journal of Transpersonal Studies* 31: 11–20. [CrossRef]

Kirk, Katherine, Lindon Eaves, and Nicholas G. Martin. 1999. Self-transcendence as a measure of spirituality in a sample of older Australian twins. *Twin Research* 2: 81–87.

Koražija, Maja, Simona Šarotar Žižek, and Damijan Mumel. 2016. The relationship between spiritual intelligence and work satisfaction among leaders and employees. *Our Economy* 62: 51–60. [CrossRef]

Kumar, V. Vineeth, and Vineeth Mehta. 2011. Gaining adaptive orientation through spiritual and emotional intelligence. *New Facets of Positivism* 2011: 281–301.

Laubach, Marty. 2004. The social effects of psychism: Spiritual experiences and the construction of privatized religion. *Sociology of Religion* 65: 239–63. [CrossRef]

Lazar, Sara W., Catherine E. Kerr, Rachel H. Wasserman, Jeremy R. Gray, Douglas N. Greve, Michael T. Treadway, Metta McGarvey, Brian T. Quinn, Jeffery A. Dusek, Herbert Benson, and et al. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport* 16: 1893–97. [CrossRef]

Leighton, Jeffrey S. 2021. The Effects of Different Types of Prayer on the Neurophysiological Functions among Evangelical Christians. Doctoral dissertation, Grand Canyon University, Phoenix, AZ, USA.

Liu, Zhenhui, Xin Li, Tonglin Jin, Qianguo Xiao, and Tena Wuyun. 2021. Effects of ethnicity and spiritual intelligence in the relationship between awe and life satisfaction among Chinese primary school teachers. *Frontiers in Psychology* 12: 673832. [CrossRef]

Lutz, Antoine, Lawrence Greischar, Nancy Rawlings, Matthieu Ricard, and Richard Davidson. 2004. Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences of the United States of America* 101: 16369–73. [CrossRef]

Malik, Muhammad Shaukat, and Sana Tariq. 2016. Impact of spiritual intelligence on organizational performance. *International Review of Management and Marketing* 6: 289–97.

Mansouri, Morteza, Mohsen Khorshidzade, and Ali Asgari. 2016. Relationship of spiritual intelligence components with students' adjustment. *Jurnal Pendidikan Malaysia* 41: 25–32.

May, Gerald G. 1974. The psychodynamics of spirituality. *Journal of Pastoral Care* 28: 84–91. [CrossRef]

Mayer, John, and Peter Salovey. 1993. The intelligence of emotional intelligence. *Intelligence* 17: 433–42. [CrossRef]

McClelland, David C. 1973. Testing for competencies rather than for "intelligence". *American Psychologist* 28: 1–14. [CrossRef] [PubMed]

McClelland, David C. 1987. *Human Motivation*. Cambridge: Cambridge University Press.

Moafi, Farnoosh, Maryam Momeni, Mohadeseh Tayeba, Sarah Rahimi, and Hamideh Hajnasiri. 2021. Spiritual intelligence and post-abortion depression: A coping strategy. *Journal of Religion and Health* 60: 326–34. [CrossRef] [PubMed]

Mohammadyari, Ghasem. 2012. Relationship between parent's spiritual intelligence, level of education and children's mental health. *Procedia-Social and Behavioral Sciences* 69: 2114–18. [CrossRef]

Muhdar, H. M., Mahlia Muis, Ria Mardiana Yusuf, and Nurjannah Hamid. 2014. The influence of spiritual intelligence, leadership, and organizational culture on organizational citizenship behavior and employees' performance (A Study on Islamic Banks in Makassar, South Sulawesi Province, Indonesia). *The International Journal of Business & Management* 2: 297.

Munawar, Khadeeja, and Omama Tariq. 2018. Exploring relationship between spiritual intelligence, religiosity and life satisfaction among elderly Pakistani Muslims. *Journal of Religion and Health* 57: 781–95. [CrossRef] [PubMed]

Myers, Jane E., and Kirk Williard. 2003. Integrating spirituality into counselor preparation: A developmental, wellness approach. *Counseling and Values* 47: 142–55. [CrossRef]

Naderi, F., and Khadijeh H. Roushani. 2011. The relations between spiritual intelligence, social intelligence and death anxiety in Ahwaz Woman Seniles. *Woman and Culture* 2: 55–67.

Narayanan, Annalakshmi, and T. P. Jose. 2011. Spiritual intelligence and resilience among Christian youth in Kerala. *Journal of the Indian Academy of Applied Psychology* 37: 263–68.

Newberg, Andrew B. 2010. *Principles of Neurotheology*. Farnham: Ashgate.

Newberg, Andrew B. 2018. *Neurotheology: How Science Can Enlighten Us about Spirituality*. New York: Columbia University Press.

Nia, Hamid Sharif, Mohammad Ali Soleimani, Abbas Ebadi, Behzad Taghipour, Leili Zera'Tgar, and Samaneh Shahidifar. 2017. The relationship between spiritual intelligence, spiritual well-being and death anxiety among Iranian veterans. *Journal of Military Medicine* 19: 336–43.

O'Sullivan, Laura, and Nicole Lindsay. 2022. The relationship between spiritual intelligence, reseilience, and well-being in an Aotearoa New Zeland sample. *Journal of Spirituality in Mental Health*. [CrossRef]

Oyewunmi, Adebukola E., Ebes Esho, and Olabode Oyewunmi. 2021. Spiritual intelligence and employee outcomes in an African sample. *Journal of Management, Spirituality & Religion* 18: 151–71.

Pant, Naveen, and S. K. Srivastava. 2019. The impact of spiritual intelligence, gender and educational background on mental health among college students. *Journal of Religion & Health* 58: 87–108.

Pargament, Kenneth L. 2007. *Spiritually Integrated Psychotherapy: Understanding and Addressing the Sacred*. New York: Guilford.

Pasyar, Nilofar, Masoume Rambod, and Zahra Behrouzi. 2020. The predictor role of perceived social support and spiritual intelligence in hope among thalassemia patients. *Malaysian Journal of Medical Science* 27: 75–83. [CrossRef] [PubMed]

Perel, Esther. 2007. *Mating in Captivity: Unlocking Erotic Intelligence*. New York: Harper.

Persinger, Michael A., Paula L. Corradini, Alexandra L. Clement, Colleen C. Keaney, Mason L. McDonald, Leah I. Meltz, Nirosha J. Murugan, Maxime R. Poirier, Kory A. Punkkinen, Melissa C. Rossini, and et al. 2010. NeuroTheology and its convergence with neuroQuantology. *NeuroQuantology* 4: 432–43. [CrossRef]

Polemikou, Anna, and Spyridon Vantarakis. 2019. Death anxiety and spiritual intelligence as predictors of dissociative posttraumatic stress disorder in Greek first responders: A moderation model. *Spirituality in Clinical Practice* 6: 182. [CrossRef]

Prest, Layne A., and James F. Keller. 1993. Spirituality and family therapy: Spiritual beliefs, myths, and metaphors. *Journal of Marriage and Family Therapy* 19: 137–48. [CrossRef]

Rani, Anita Abdul, Imaduddin Abidin, and Mohd Rashid Ab Hamid. 2013. The impact of spiritual intelligence on work performance: Case studies in government hospitals of east coast of Malaysia. *The Macrotheme Review* 2: 46–59.

Riahi, Somayeh, Fateme Goudrzi, Shirin Hasanvand, Hasan Abdollahzadeh, Farzad Ebrahimzadeh, and Zahra Dadvari. 2018. Assessing the effect of spiritual intelligence training on spiritual care competency in critical care nurses. *Journal of Medicine and Life* 11: 346–54. [CrossRef]

Riveros, Rodrigo, and Mary Helen Immordino-Yang. 2021. Toward a neuropsychology of spiritual development in adolescence. *Adolescent Research Review* 6: 323–32. [CrossRef]

Robertson, Sean E. 2022. The Psychological and Physiological Markers of Christian Meditation: A quasi-Experimental Study of Centering Prayer. Doctoral dissertation, George Fox University, Newberg, OR, USA.

Salovey, Peter, and John Mayer. 1990. Emotional intelligence. *Imagination, Cognition & Personality* 9: 185–211.

Schutte, Nicola S., John M. Malouff, Lena E. Hall, Donald J. Haggerty, Joan T. Cooper, Charles J. Golden, and Liane Dornheim. 1998. Development and validation of a measure of emotional intelligence. *Personality and Individual Differences* 25: 167–77. [CrossRef]

Seitz, Rüdiger J., Janpeter Nickel, and Nina Azari. 2006. Functional modularity of medial prefrontal cortex: Involvement in human empathy. *Neuropsychology* 20: 743–51. [CrossRef] [PubMed]

Selvey, Henry A. 1977. The spiritual experience: Speculations on its nature and dynamics. *Journal of Pastoral Care* 31: 76–83. [CrossRef]

Shabani, Jafar, Siti Hassan, Aminah Ahmad, and Maznah Baba. 2010. Age as moderated influence on the link of spiritual and emotional intelligence with mental health in high school student. *Journal of American Science* 6: 394–400.

Sharif, Saeed Pahlevan, Hamid Sharif Nia, Rebecca H. Lehto, Maryam Moradbeigi, Navaz Naghavi, Amir Hossein Goudarzian, Ameneh Yaghoobzadeh, and Roghieh Nazari. 2021. The relationship between spirituality dimensions and death anxiety among Iranian veterans: Partial least squares structural equation modeling approach. *Journal of Religion and Health* 60: 999–1014. [CrossRef] [PubMed]

Sharifinia, Amir Masoud, Ritin Fernandez, Heidi Green, and Ibrahim Alananzeh. 2022. The effectiveness of spiritual intelligence educational interventions for nurses and nursing students: A systematic review and meta-analysis. *Nurse Education in Practice* 63: 103380. [CrossRef] [PubMed]

Sharma, Sonia. 2017a. A study of relationship between spiritual intelligence and adjustment in relation to their age and family system of working women. *Indian Journal of Positive Psychology* 8: 342–46.

Sharma, Sonia. 2017b. A study of occupational adjustment in relation to emotional intelligence and spiritual intelligence and among senior secondary school teachers. *DVS International Journal of Multi-Disciplinary Research* 3: 30–39.

Shults, F. LeRon, and Steven J. Sandage. 2006. *Transforming Spirituality: Integrating Theology and Psychology*. Ada: Baker Academic.

Siswanti, Dian Novita, Rozainee Khairuddin, and Fatimawati Halim. 2018. The effect of spiritual intelligence, emotion and social competency to the leadership competence. *Journal of Physics: Conference Series* 1028: 012193.

Skrzypińska, Katarzyna. 2021. Does spiritual intelligence (SI) exists? A theoretical investigation of a tool useful for finding the meaning of life. *Journal of Religion and Health* 60: 500–16. [CrossRef]

Snelgar, Robin John, Michelle Renard, and Stacy Shelton. 2017. Preventing compassion fatigue amongst pastors: The influence of spiritual intelligence and intrinsic motivation. *Journal of Psychology & Theology* 45: 247–60.

Söylemez, Aydın, Mustafa Koç, and Büşra Söylemez. 2016. Adaptation of the Integrated Spiritual Intelligence Scale into Turkish. *Journal of Family Counseling, and Education* 1: 18–24. [CrossRef]

Strauss, Anselm, and Juliet Corbin Corbin. 1990. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Thousand Oaks: Sage.

Taghiabadi, Mina, Ali Kavosi, Seyed Reza Mirhafez, Mahrokh Keshvari, and Tayebe Mehrabi. 2017. The association between death anxiety with spiritual experiences and life satisfaction in elderly people. *Electron Physician* 9: 3980–85. [CrossRef] [PubMed]

Tanner, Carmen, and Markus Christen. 2014. Moral intelligence–A framework for understanding moral competences. In *Empirically Informed Ethics: Morality between Facts and Norms*. Edited by Markus Christen, Carel van Shaik, Johannes Fischer, Markus Huppenbauer and Carmen Tanner. Berlin and Heidelberg: Springer, pp. 119–36.

Vikas, Minchekar S. 2020. Spiritual intelligence of male and female managers in private sectors. *UCG Care Journal* 40: 103–6.

Wong, Chi-Sum, and Kenneth Law. 2002. The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *The Leadership Quarterly* 13: 243–74. [CrossRef]

Yahyazadeh-Jeloudar, Soleiman, and Fatemeh Lotfi-Goodarzi. 2012. What is the relationship between spiritual intelligence and job satisfaction among MA and BA Teachers? *International Journal of Business and Social Science* 4: 209–13.

Yang, Fenggang. 2010. Religion in China under communism: A shortage economy explanation. *Journal of Church and State* 52: 3–33. [CrossRef]

Yang, Fenggang. 2012. *Religion in China: Survival and Revival under Communist Rule*. Oxford: Oxford University Press.

Yousefzadeh, Fateme, Gila Pirzad Jahromi, Ehsan Mokari Manshadi, and Boshra Hatef. 2019. The effect of prostration (Sajdah) on the prefrontal brain activity: A pilot study. *Basic and Clinical Neuroscience* 10: 257. [PubMed]

Zhao, Yanxia, and Xinzhong Yao. 2010. *Chinese Religion: A Contextual Approach*. New York: Continuum International PG.

Zohar, Danah. 1997. *Rewiring the Corporate Brain: Using the New Science to Rethink How We Structure and Lead Organizations*. Oakland: Berrett-Koehler.

Zohar, Danah, and Ian Marshall. 2000. *SQ: Spiritual Intelligence, the Ultimate Intelligence*. London: Bloomsbury.