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A Viable Model and Self-Report Measure of Spiritual Intelligence

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A four-factor model of spiritual intelligence is first proposed. Supportive evidence is reviewed for the capacities of critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion. Based on this model, a 24-item self-report measure was developed and modified across two consecutive studies ($N = 619$ and $N = 304$, respectively). The final version of the scale, the Spiritual Intelligence Self-Report Inventory (SISRI-24), displayed excellent internal reliability and good fit to the proposed model. Correlational analyses with additional measures of meaning, metapersonal self-construal, mysticism, religiosity, and social desirability offer support for construct and criterion-related validity. According to both intelligence criteria and current psychometric standards, findings validate the proposed model and measure of spiritual intelligence. Future directions are discussed.

The nature of human intelligence and its psychological study have been areas of continuous scientific debate (for a review, see Cianciolo & Sternberg, 2004). Many have argued that the sum of human intelligence is best described as a single construct, such as the intelligence quotient (IQ), while others have suggested multiple intelligences (Cianciolo & Sternberg, 2004; Gardner, 1983; Sternberg, 1988). Howard Gardner, a leading advocate of the latter standpoint, has proposed eight intelligences, including linguistic, logical-mathematical, spatial, musical, naturalist, and bodily-kinesthetic (Gardner, 1983, 1993, 1999). Recent decades have also witnessed extensive literature on social and emotional intelligences, which describe cognitive abilities of emotional perception and management on intra- and inter-personal levels (e.g., Gardner, 1983; Goleman, 1995; Mayer, Caruso, & Salovey, 2000; Salovey & Mayer, 1990).

In order to evaluate potential additional intelligences (e.g., moral intelligence; Gardner, 1993), leading theorists have suggested rigid criteria that must first be satisfied. It is generally established that an intelligence should (1) include a set of moderately interrelated mental abilities (i.e., core capacities for which cognition is primary; those which are distinct from preferred behaviors or traits), (2) facilitate adaptation,

problem-solving, and reasoning in all environmental contexts, and (3) develop with age and experience (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997). Gardner (1983) also recommended neurological/biological evidence, evolutionary plausibility, and support from psychometrics and experimental psychology.

Spiritual Intelligence

Of the additional intelligences proposed, the concept of spiritual intelligence has remained a forerunner in the past decade (Amram, 2007; Emmons, 2000a; Nasel, 2004; Noble, 2000; Vaughan, 2002; Wolman, 2001; Zohar & Marshall, 2000). Emmons (2000a) provided support for spiritual intelligence according to Gardner's (1983) criteria, proposing five core abilities: 1) the capacity for transcendent awareness (of a divine being or oneself); 2) the ability to enter spiritual states of consciousness; 3) the ability to sanctify everyday experiences; 4) the ability to utilize spirituality to solve problems; and 5) the capacity to engage in virtuous behaviors (e.g., forgiveness). The last of these capacities has since been removed (Emmons, 2000b) due to its more accurate interpretation as preferred behavior (Mayer, 2000).

Noble (2000) concurred with Emmons' (2000a) conception of spiritual intelligence and added two additional core abilities: (1) "the conscious recognition

that physical reality is embedded within a larger, multidimensional reality” (p. 46); and (2) “the conscious pursuit of psychological health, not only for ourselves but for...the global community” (p. 46). The first of these abilities can be readily amalgamated with Emmons’ (2000a) capacity for transcendent awareness, while the second more closely resembles preferred behavior.

The capacity for transcendent awareness has been equally emphasized by Wolman (2001) and Vaughan (2002). Others have added the capacity for existential thinking and questioning (e.g., Nasel, 2004; Vaughan, 2002; Wolman, 2001; Zohar & Marshall, 2000) as a core aspect of spiritual intelligence. Zohar and Marshall (2000) further contended that spiritual intelligence represents the brain’s unitive processes which serve to reconceptualize experience and produce meaning. Nasel (2004) described the construct as “the application of spiritual abilities and resources to practical contexts” (p. 4), identifying two main components of existential questioning and the awareness of divine presence. His 17-item Spiritual Intelligence Scale incorporates traditional Christian values and New Age spirituality, yet fails to offer a universal measure of spiritual abilities as opposed to experiences and behaviors.

More recently, Amram (2007) identified seven major themes of spiritual intelligence, including meaning, consciousness, grace, transcendence, truth, peaceful surrender to Self, and inner-directed freedom. His Integrated Spiritual Intelligence Scale consists of 22 subscales organized into five theoretical domains of consciousness, grace, meaning, transcendence, and truth (Amram & Dryer, 2007). Like Nasel (2004), however, Amram (2007) failed to distinguish carefully among spiritual ability, behavior, and experience, resulting in a model which is best described as a lived spirituality. Previous models have made similar errors. For example, Wolman (2001) contended that phenomenological experience is a critical component of spiritual intelligence, while others have involved theological interpretations (e.g., Emmons, 2000a; Nasel, 2004), resulting in limited theories which cannot be universally applied.

Gardner (1993, 2000) has remained hesitant to accept a spiritual intelligence in his own model of multiple intelligences, arguing that the concept is too confounded with phenomenological experience and religious belief. He has, however, expressed preference for an existential intelligence, which Halama and Strizenec (2004) described as a related and overlapping construct to spiritual intelligence. The current paper will offer

evidence to support the notion that spiritual intelligence not only involves existential capacities, but that it exists as a set of mental abilities that are distinct from behavioral traits and experiences, satisfying established intelligence criteria (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997).

The subsequent model also assumes a contemporary interpretation of spirituality that distinguishes it from the construct of religiosity (King, Speck, & Thomas, 2001; Koenig, McCullough, & Larson, 2000; Love, 2002; Sinnott, 2002; Wink & Dillon, 2002; Wulff, 1991). Religion is viewed as “an organized system of beliefs, practices, rituals, and symbols” (Koenig et al., 2000, p. 18), while spirituality is regarded as “the personal quest for understanding answers to ultimate questions about life, about meaning, and about relationship to the sacred or transcendent” (p. 18). As many authors (e.g., Helminiak, 2001; Worthington & Sandage, 2001) have noted, however, religion and spirituality remain intimately connected, with religion being “the social vehicle that, at its best, proclaims and supports spirituality” (Helminiak, 2001, p. 165). While religion and spiritual intelligence are also likely related, this is a topic of discussion which cannot be adequately addressed within the confines of the current paper. Nevertheless, it is maintained that spiritual intelligence and religiosity are distinct but related psychological constructs. As such, the current model may or may not be consistent with established religious approaches or systems of belief. This is not a setback of the current model; rather, it is the result of a commitment to the identification of cognitive abilities as opposed to beliefs and attitudes, which is necessary in the establishment of a universal human intelligence (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997).

A Viable Model of Spiritual Intelligence

In the current model, spiritual intelligence is defined 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 (King, 2008). An extensive review of the literature supports four core components: (1) critical existential thinking, (2) personal meaning production, (3) transcendental awareness, and (4) conscious state expansion. Following a discussion of each of these capacities, additional support for adaptive applications and development over the lifespan will be reviewed.

Critical Existential Thinking (CET)

The first component of spiritual intelligence involves the capacity to critically contemplate meaning, purpose, and other existential or metaphysical issues (e.g., reality, the universe, space, time, death). In addition to the mounting support for Gardner's (1993) suggestion of an existential intelligence (e.g., Halama & Strizenec, 2004; Shearer, 2006; Simmons, 2006), existential thinking is commonplace in definitions of both spirituality (e.g., Koenig, McCullough, & Larson, 2000; Matheis, Tulskey, & Matheis, 2006; Wink & Dillon, 2002) and spiritual intelligence (Nasel, 2004; Vaughan, 2002; Wolman, 2001; Zohar & Marshall, 2000). It is currently argued that critical existential thinking can be applied to any life issue, as any object or event can be viewed in relation to one's existence. While some discuss a "quest for understanding answers" (Koenig et al., 2000, p. 18) to these seemingly ultimate questions (e.g., Noble, 2000), this can more practically be considered as a related pattern of behavior.

To a large extent, aspects of cognition are inherent in the discussion of existential tendencies, with frequent references to existential thinking (e.g., Garo, 2006), existential contemplation (e.g., Lavoie & de Vries, 2004), and existential reasoning (e.g., Evans & Wellman, 2006), leading to the more plausible inference of mental capacity. Furthermore, self-estimates of intelligence have revealed that perceived existential intelligence is a significant predictor of perceived overall intelligence (Furnham, Wytykowska, & Petrides, 2002).

It is further contended that simply questioning existence does not demonstrate complete mastery of this ability. One must be able to contemplate such existential issues using critical thinking, and in some cases come to original conclusions or personal philosophies regarding existence, integrating scientific knowledge and personal experience. Critical thinking, defined as "actively and skilfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication" (Scriven & Paul, 1992), more accurately reflects intelligence.

Personal Meaning Production (PMP)

The second core component is defined as the ability to construct personal meaning and purpose in all physical and mental experiences, including the capacity to create and master a life purpose. Like existential thinking, personal meaning is frequently described as a component of spirituality (e.g., King, Speck, & Thomas,

2001; Koenig et al., 2000; Sinnott, 2002; Wink & Dillon, 2002; Worthington & Sandage, 2001), requiring its consideration in a model of spiritual intelligence. Nasel (2004) concurred, suggesting that spiritual intelligence "involves contemplation of the symbolic meaning of personal events and circumstances, in order to find purpose and meaning in all life experiences" (p. 52). In essence, Emmons' (2000a) capacity for sanctification is one particular method of personal meaning production.

Personal meaning has been defined as "having a purpose in life, having a sense of direction, a sense of order and a reason for existence" (Reker, 1997, p. 710). Meddin (1998) identified a cognitive component of personal meaning, defined as "an integrative organizing principle (or set of principles) which enables one to make sense (cognition) of one's inner life and outer environment" (p. 164), which closely resembles Zohar and Marshall's (2000) description of the brain's tertiary processes. A cognitive component was also suggested by Wong (1989), who defined personal meaning as "an individually constructed cognitive system, that is... capable of endowing life with personal significance and satisfaction" (p. 517).

Reker's (1997) definition highlights the fundamental relationship between meaning and purpose. In addition to deriving purpose from daily events and experiences (i.e., situational meaning), one is also capable of defining a purpose for his/her life (i.e., global meaning), utilizing more coherent and creative forms of meaning production. The mastery of a life purpose refers to one's ability to infer his/her purpose in all events and experiences. A seemingly infinite number of sources of meaning and purpose have been described in the literature, including leisure activities (Reker & Wong, 1988), work (Thompson, 1992), reminiscence (Wong, 1989), and dreams (Taylor, 2001), to name a few. The ability to create meaning and purpose in all mental and physical experiences occupies the highest level of this particular ability.

Transcendental Awareness (TA)

The third component involves the capacity to perceive transcendent dimensions of the self (e.g., a transcendent self), of others, and of the physical world (e.g., nonmaterialism, interconnectedness) during the normal, waking state of consciousness. The transcendent is commonplace in definitions of spirituality (e.g., King et al., 2001; Koenig et al., 2000; Martsof & Mickley, 1998; Sinnott, 2002), with one aspect of particular interest to the current model: awareness (Martsof & Mickley,

1988). Pascual (1990) proposed that transcendental awareness, particularly the awareness of a transcendental self, is a key factor of spiritual intelligence. Wolman (2001) explained this more broadly as the ability to sense a spiritual dimension of life, reflecting what James (1902/2002) had previously described as “a sense of present reality more diffused and general than that which our special senses yield” (p. 72). Other authors have concurred (e.g., Emmons, 2000a; Nasel, 2004; Noble; 2001).

Building on the work of Abraham Maslow, Hamel, Leclerc, and Lefrançois (2003) have described an additional process of transcendent-actualization, which they define as “a self-realization founded on an awareness and experience of a Spiritual Center, also called the Inner Being or the Self” (p. 4). Csikszentmihalyi (1993) also referred to the transcendent self, describing successful individuals as transcendents who “move beyond the boundaries of their personal limitations by integrating individual goals with larger ones, such as the welfare of the family, the community, humanity, the planet, or the cosmos” (p. 219). Similarly, Le and Levenson (2005) described self-transcendence as “the ability to move beyond self-centered consciousness, and to see things... with a considerable measure of freedom from biological and social conditioning” (p. 444). The recognition and ongoing awareness of a transcendent self is a key component of this capacity.

Hamel et al. (2003) recently identified two components of Maslow’s (1971) metacognition (i.e., an expanded unitive consciousness). The first component is in-depth perception, described as the “ability to discern and explore the different aspects of one’s life and life in general, going beyond appearances” (Hamel et al., 2003, p. 11) and developing “a perception of realities that ordinary consciousness cannot perceive but that are common in contemplation” (p. 12). The second component is holistic perception, defined as the “ability to perceive one’s life and life in general from a viewpoint independent of numerous attachments” (p. 11). It is further described as “an apprehension of reality with all its contradictions and incompatibilities, a global integrative vision of the essential core of beings and events” (p. 12). These components describe cognitive abilities of perception and awareness, the targets of which are often said to exist outside of ordinary consciousness (to the extent that they are not perceived by the physical senses), including nonmaterialism, holism, interconnectedness, and transcendent aspects of the self and others.

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Collectively, these various abstractions represent what is currently described as transcendent.

Conscious state expansion (CSE)

The final component of the current model is the ability to enter spiritual states of consciousness (e.g., pure consciousness, cosmic consciousness, oneness) at one’s own discretion. From a psychological perspective, the distinction between transcendental awareness and conscious state expansion is well supported (Tart, 1975). The former must occur during the normal waking state, while the latter involves the ability to transcend this state and enter higher or spiritual states. A growing body of research has demonstrated significant differences in brain functioning between all levels and states of consciousness, including those associated with spiritual experiences and meditation (for a review, see Cahn & Polich, 2006; Vaitl et al., 2005). States commonly referred to as spiritual include cosmic consciousness (Bucke, as cited in James, 1902/2002), pure consciousness (e.g., Gackenbach, 1992), and unitive consciousness (Maslow, 1964).

Expanded or altered states of consciousness are deeply rooted aspects of religion and spirituality (James, 1902/2002; Maslow, 1964). As such, it is necessary to consider a potential mental ability that might underlie the experience of these states, as Emmons (2000a) correctly did in his own model of spiritual intelligence. Due to their phenomenological quality and potential spontaneous occurrence (James, 1902/2002; Maslow, 1964; Vaitl et al., 2005), however, the mere experience of such states does not constitute mental ability.

What is far less debatable is the capacity for entering these states at one’s own discretion. Vaitl et al. (2005) identified a set of altered states of consciousness which are triggered by one’s own mental exercises, as in meditation and relaxation. Over a century earlier, James (1902/2002) made a similar observation, noting that “the oncoming of mystical states may be facilitated by preliminary voluntary operations” (p. 415). He also described a “methodical cultivation” (p. 436) of such altered states in various religions, some of which involve an “intellectual concentration” (p. 436). Maslow (1964) agreed, stating that peak experiences are “to some extent under our own control” (p. 32). More recent psychological literature has reported individuals who are highly skilled at entering spiritual or mystical states of consciousness (e.g., Holmes, Solomon, Cappel, & Greenberg, 1983; Lehmann et al., 2001). Although Gardner (2000) contended that the ability to enter such

states is reflective of his bodily-kinesthetic intelligence, a cognitive component is no less evident and fundamental to this capacity (James, 1902/2002; Vaitl et al., 2005).

Adaptive applications

Myriad studies have demonstrated an adaptive role of spirituality in individuals suffering from a variety of health conditions, including cancer (e.g., Holland et al., 1999), spinal cord injuries (e.g., Matheis et al., 2006), and substance abuse disorders (e.g., Piedmont, 2004), among others. Positive relationships have also been observed between spirituality and adaptability to parental loss (Greeff & Human, 2004) and career transitions (Duffy & Blustein, 2005). It is from these studies that the adaptive role of spiritual intelligence can be generally inferred.

There are particular situations in which spiritual intelligence would prove highly adaptive: the existential neurosis and the existential crisis. An existential neurosis is "characterized by the belief that one's life is meaningless" (Maddi, 1967, p. 313). Similarly, an existential vacuum can result from a loss of meaning in life or "the frustration of the will to meaning" (Frankl, 1969, p. 45). Such existential crises can result from isolation, the inevitability of death (Yalom, 1980), trauma (e.g., Goddard, 2004), rapid cultural change (e.g., Madison, 2006), and job loss (Hilpert, 1987). Highly developed levels of critical existential thinking and personal meaning production would prove particularly valuable, facilitating both contemplation of the crisis and creation of meaning within its framework, potentially preventing many crises from ever fully developing. Maddi (1967) suggested that one possible source of an existential neurosis is a premorbid identity, in which "the person [considers] himself to be nothing more than...an embodiment of biological needs" (p. 315), a conviction which would be inhibited (if not entirely prevented) by the perception of a transcendent self.

Additional research has suggested that the ability to construct meaning is adaptive in a variety of circumstances, including depression, neuroticism, and suicidal ideation (e.g., Mascaro & Rosen, 2005). When faced with a stressor, personal meaning production acts as a coping method by allowing an individual to construct meaning and purpose within the stressful situation, thereby transforming it and reducing its negative impact. It has also been demonstrated that perceptions of interconnectedness and a transcendent self are highly adaptive in substance abuse recovery (Piedmont, 2004), depression (Ellermann & Reed,

2001), and coping with HIV/AIDS (e.g., Mellors, 1999). Although research is limited, transcendental awareness likely invokes a sense of security, acting as a source of coping when material resources are lacking or insufficient. In regards to conscious state expansion, a variety of adaptive applications can be inferred from research on meditation, which has revealed correlations with reduced physiological indicators of stress (e.g., Alexander et al., 1989). One can further postulate that this capacity would serve as a valuable coping method when faced with a crisis (existential or otherwise) due to its anxiety-inhibiting effects (Vaitl et al., 2005).

Lifespan development

Accumulating evidence suggests that spiritual capacities can emerge in childhood. Piechowski (2001) noted many common themes in the spiritual experiences of children, including states of oneness and a sense of self beyond physical reality. Hay and Nye (1998) identified children aged six to ten years who could describe their own techniques for entering higher states of consciousness, including silent gazing, prayer, and contemplating one's origins and the origins of the world. Gackenbach (1992) maintained that the whole range of higher states of consciousness can be experienced by children, in some cases at an adult level, indicating the existence of consciousness savants. Evans and Wellman (2006) also discussed a childhood potential for existential reasoning which is contingent on the development of theory of mind.

Adolescence and young adulthood appear to be marked by an expansion of all spiritual capacities, resulting in part from identity formation and the emergence of abstract reasoning (Ellsworth, 1999; Fitzgerald, 2005; Helminiak, 1987). According to Parks (1986, 2000), individuals between the ages of 17 and 30 develop in their meaning-making abilities and become more aware of their conception of reality. Cook and Oltjenbruns (1982) also observed evidence of significant development in existential skills during high school. This development continues throughout adulthood, as abilities deepen and contribute to the awareness of a transcendent self (Hamel et al., 2003; Helminiak, 1987). In later adulthood, abilities peak in many individuals as death approaches. According to Tornstam (2005), later stages of life are characterized by a redefinition of the perception of time, space, life, and death; the transcendence of the ego, of the physical body, and of material interests; and an increase in time spent meditating on life.

This is not to say, however, that abilities cannot peak in earlier stages of development. As suggested by Noble (2000) and Vaughan (2002), spiritual experiences contribute to the individual development of spiritual intelligence. Evidence, although limited, also supports the existence of individuals who are highly skilled and/or gifted in their spiritual abilities (e.g., Emmons, 2000a; Gackenbach, 1992; Holmes et al., 1993; Lehmann et al., 2001; Lovecky, 1998; Piechowski, 1998), suggesting that spiritual intelligence increases with both age and experience.

Thus far, spiritual intelligence has satisfied the three primary criteria for intelligence: a set of characteristic mental abilities that are distinct from preferred behaviors, the facilitation of adaptation and problem-solving, and development over the lifespan (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997). Empirical evidence further suggests that spiritual experiences and their related sensations display physiological correlates in the brain, primarily in (but not limited to) the temporal lobes and limbic system (for reviews and more detailed summaries of related findings, see d'Aquili & Newberg, 1999; Persinger, 1983, 2001; Ramachandran, 1998). It has also been discovered that altered brain activity occurs during heightened states of consciousness (e.g., Cahn & Polich, 2006; Persinger, 1983; Tart, 1975; for a review, see Vaitl et al., 2005). Although further research is required on spiritual capacities in particular, these findings provide preliminary support for potential biological foundations of spiritual intelligence. As Emmons (2000a) noted, there is also a fair amount of evidence for the evolutionary plausibility of spiritual intelligence, with religious doctrine and dogma developing out of a need to conceptualize, articulate, and interpret related spiritual experiences (Love, 2002).

The current model is not simply a reformulation or redefinition of spirituality. Rather, its primary purpose is the identification of those mental capacities and abilities related to human spirituality. To date, two self-report measures of spiritual intelligence have been proposed (Amram & Dryer, 2007; Nasel, 2004), yet neither has fully complied with leading criteria for intelligence (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997). While it has been suggested that measures of spirituality also tap aspects of spiritual intelligence (Halama & Strizenec, 2004), Gardner's (1983) criterion of psychometric evidence appears to be lacking. The subsequent studies were carried out in order to address these issues.

Spiritual Intelligence

Study 1: Scale Development

As suggested by Clark and Watson (1995), the development of a sound theoretical model on which test items are based is a crucial first step in scale development. The vast majority of researchers rely on a thorough literature review of the subject in order to infer from previous research a model of the construct. This has been the current approach. The purpose of Study 1 was to develop and test a preliminary self-report measure of spiritual intelligence.

Method

Item generation. An original pool of 84 items was developed based on the current theoretical conception of spiritual intelligence. Many items were modelled based on previously established measures of spirituality, meaning, and transcendence, while others were generated in order to complete the full ranges of the four capacities. The initial item pool was over-inclusive so as to avoid the exclusion of potential indicators of the construct (Clark & Watson, 1995). A multiple-choice, Likert-type scale was utilized, with responses ranging on a scale of 0 to 4, representing the extent to which each statement was true for the respondent. In total, 12 reverse-coded items were included as indicators of internal reliability. The initial item pool was reviewed by 34 adults (including professors of psychology, students, and members of the community) for logic and readability. Items were edited based on feedback, resulting in a preliminary draft of the Spiritual Intelligence Self-Report Inventory (SISRI).

Participants. Respondents were 488 females and 131 males ($N = 619$) enrolled in undergraduate psychology courses at Trent University in Peterborough, Ontario, Canada. The mean age was 22.51 years ($SD = 5.51$; range = 17 to 59).

Measures. Participants were asked to provide demographic information (including sex and age) before completing the preliminary 84-item Spiritual Intelligence Self-Report Inventory (with 21 items measuring each of the four components of spiritual intelligence).

Procedure. Participation took place in classroom settings and lasted approximately 25 minutes. Each participant was asked to read and sign a consent form prior to participation ensuring confidentiality and the right to withdraw at any time without penalty.

Results

Properties of the original 84-item SISRI. Descriptive statistics and response distributions were first examined for all 84 items. Although none reached significance, slight skewness was observed for 15 of

the items, which were deemed good candidates for removal. Cronbach's alpha was .97, suggesting very high internal consistency and reliability (a minimum of .80 is recommended; Clark & Watson, 1995; Worthington & Whittaker, 2006). The average inter-item correlation was .30, which falls in the suggested range of .15 to .50 (Clark & Watson, 1995).

Exploratory factor analysis. All responses for the 84-item pool were subjected to a principal components analysis (EFA) with Varimax normalized rotation. Six factors were initially extracted and factor loadings of .35 or higher were deemed significant (Clark & Watson, 1995). All eigenvalues met the suggested minimum value of 1.0 in order for their corresponding factors to be considered for retention (Clark & Watson, 1995; Worthington & Whittaker, 2006). The third factor extracted was composed of all 12 reverse-coded items, suggesting that these items were unstable. One of these items displayed a cross-loading on Factor 4 and was considered for retention. The three items loading on the sixth factor had no theoretical connection, leading to this factor's removal. Items loading on factors 1, 2, 4, and 5 corresponded primarily to critical existential thinking, conscious state expansion, personal meaning production, and transcendental awareness, respectively.

Item Retention. The primary criterion for item retention was theoretical necessity (as suggested by Clark & Watson, 1995). As such, items were removed only if such removal did not result in inadequate model representation. All items with converging cross-loadings (with differences of less than .15; Clark & Watson, 1995) were considered for removal, as were those which loaded on theoretically unrelated factors or displayed no significant loadings whatsoever. Finally, a number of items were removed in order to reduce redundancy and to obtain a desirable scale length. In total, 42 items were retained, including 12 items measuring critical existential thinking, 11 items measuring conscious state expansion, 9 items measuring personal meaning production, and 10 items measuring transcendental awareness.

Properties of the Reduced 42-Item SISRI. Alpha for the 42-item pool was .96, which was slightly lower than in the original 84-item pool but considered an improvement to the data (Clark & Watson, 1995). The average inter-item correlation was .36. When subjected to a second principal components EFA, all four factors displayed eigenvalues above 1.0 and no residual correlations exceeded .14, adding confidence to the factors and items retained (Clark & Watson, 1995).

Study 2: Scale Validity

The primary purpose of Study 2 was to investigate the factor structure of the Spiritual Intelligence Self-Report Inventory (SISRI) in a subsequent sample. Construct validity was examined by including additional measures of theoretically related and unrelated constructs (DeVellis, 1991). As is standard in scale development, social desirability was also examined.

Hypothesis 1. Based on the theoretical conception of spiritual intelligence and the factor structure observed in Study 1, it was hypothesized that a four-factor model of spiritual intelligence would reveal adequate fit to the data. Hypothesis 2. Based on the current definition of personal meaning production, it was hypothesized that a significant positive relationship would be observed between this subscale of the SISRI and a measure of personal meaning. Hypothesis 3. Given that metapersonal self-construal has been described as a more spiritual form of self-reference (DeCicco & Stroink, 2007), it was hypothesized that a significant positive relationship would be observed between the SISRI and the metapersonal self. Hypothesis 4. Based on the current definition of conscious state expansion, it was hypothesized that a significant positive relationship would be observed between mystical experiences and this subscale of the SISRI. Hypothesis 5. The SISRI was expected to display a non-significant to low correlation with extrinsic religiosity and a positive yet low to moderate correlation with intrinsic religiosity. These predictions were based on definitions of religiosity which tend to relate the intrinsic orientation more closely to spirituality (e.g., Pargament, 1997).

Method

Participants. Respondents were 231 females and 74 males ($N = 305$) enrolled in undergraduate psychology courses at Trent University in Peterborough, Ontario, Canada. The mean age was 25.56 years ($SD = 10.93$; range = 18 to 63).

Demographics. A one-page survey of basic demographic information accounted for sex, age, ethnicity, relationship status, and level of education.

Measures. A total of six measures were utilized to evaluate participants.

The Spiritual Intelligence Self-Report Inventory (SISRI). The 42-item draft of the SISRI, as developed in Study 1, was utilized in Study 2.

The Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006). The MLQ is a 10-item self-report measure of personal meaning

composed of two subscales: presence of meaning ($\alpha = .88$) and search for meaning ($\alpha = .90$). Validity and reliability have been supported by Steger et al. (2006).

The Metapersonal Self Scale (MPS; DeCicco & Stroink, 2007). The MPS is a 10-item ($\alpha = .89$) self-report measure of metapersonal self-construal, which is the interpretation of one's self as connected to all life. This scale was found to be high in convergent and discriminant validity by DeCicco and Stroink (2007).

The Mysticism Scale – Research Form D (MSD; Hood, 1975). The MSD is a 32-item ($\alpha = .94$) self-report measure of mystical and spiritual experiences, particularly those involving oneness, peace, timelessness, and wonder. While Hood (1975) suggested two factors of intense experience of unity and affectively charged religious revelation, Hood, Morris, and Watson (1993) later proposed three factors of extrovertive mysticism, religious interpretation, and introvertive mysticism. Scale validity and reliability have been well-supported by Hood (1975) and Hood et al. (1993).

The Age Universal Intrinsic-Extrinsic Religiosity Scale (AUIE; Gorsuch & Venable, 1983). The AUIE is a 19-item, two-factor self-report measure of intrinsic ($\alpha = .89$) and extrinsic ($\alpha = .77$) religious orientations. Validity and reliability were supported by Gorsuch and Venable (1983).

The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984). The BIDR is a 40-item self-report measure composed of two factors related to socially desirable responding: self-deception ($\alpha = .72$) and impression management ($\alpha = .72$). Internal and external validity of the BIDR have been supported by Paulhus (1984) and Lanyon and Carle (2007).

Procedure. Participation took place in classroom settings and lasted approximately 45 minutes. Each participant was asked to read and sign a consent

form prior to participation ensuring confidentiality and the right to withdraw at any time without penalty. The ordering of questionnaires varied across participants so as to reduce potential effects on response patterns (e.g., priming).

Results

Properties of the 42-Item SISRI. Descriptive statistics and response distributions were first examined for the 42-item pool. No items displayed significant skewness or kurtosis. Alpha for the SISRI-42 was .96, which reflects observations in Study 1. The average inter-item correlation was .36.

Confirmatory factor analysis. The structural equation modelling (SEM) module of Statistica 7.0 (Statsoft, 2006) was utilized for the confirmatory factor analysis (CFA). The four-factor model observed in Study 1 was investigated for its fit to the data in Study 2. Parameter estimates (maximum likelihood) for all 42 manifest variables were significant. The discrepancy function for the four-factor model was 6.96. In addition to the chi-square goodness-of-fit (χ^2), the following fit indices were examined (see Table 1): the root mean square error of approximation (RMSEA), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the standardized root mean square residual (SRMSR), and the comparative fit index (CFI). These fit indices are commonly employed measures of CFA model fit (Schermelleh-Engel & Moosbrugger, 2003; Tabachnick & Fidell, 2007). The following cut-off values were employed to determine adequacy: a maximum χ^2/df ratio of 2.0; a maximum SRMSR of .08; a minimum CFI of .95; a maximum RMSEA of .10; an RMSEA lower confidence limit of close to .05; a minimum AGFI of .85; and a minimum GFI of .90 (Schermelleh-Engel & Moosbrugger, 2003; Tabachnick & Fidell, 2007).

Table 1
Fit Indices for Confirmatory Factor Analysis of the 42-Item SISRI

	χ^2	RMSEA	LCL	UCL	SRMSR	GFI	AGFI	CFI	df
Value	2108.72*	.080	.077	.084	.067	.726	.695	.832	813

Note. LCL = RMSEA Lower Confidence Limit; UCL = RMSEA Upper Confidence Limit.

* $p < .0001$

Tabachnick and Fidell (2007) noted that with large sample sizes (over 200), the chi-square value is almost always significant, and is therefore a poor indicator of model fit. The chi-square/df ratio was calculated in order to gain a more meaningful summary of these statistics. The four-factor model displayed a ratio of 2.59, which exceeded the recommended maximum value of 2.0 for good fit (Tabachnick & Fidell, 2007). While the SRMSR and RMSEA met cut-offs for adequate fit, the GFI, AGFI, and CFI did not, suggesting poor model fit (see Table 1).

Scale modification. Based on high residual correlations, high item correlations, and redundancy, five items were removed from the CET subscale; four items were removed from the PMP subscale; three items were removed from the TA subscale; and six items were removed from the CSE subscale. This left a total of 24 items for the final draft of the SISRI (subsequently dubbed the SISRI-24; see Appendix).

Properties of the SISRI-24. The final 24-item pool displayed an alpha of .92, which represents a more appropriate level of internal reliability (Clark & Watson, 1995). Individual subscales of CET, PMP, TA, and CSE also displayed adequate alpha coefficients of .78, .78, .87, and .91, respectively. The average inter-item correlation was .34, with split-half reliability at the .91 level. These analyses suggest excellent psychometric properties of the SISRI-24.

A confirmatory factor analysis of the SISRI-24 revealed significant parameter estimates for all 24 variables (see Figure 1) with a discrepancy function of 1.53, indicating better model fit for the SISRI-24 compared to the 42-item version (Tabachnick & Fidell, 2007). The χ^2/df ratio was 1.89, which fell under the recommended maximum value of 2.0 for good model fit (Tabachnick & Fidell, 2007). The SRMSR, RMSEA,

and AGFI also met their recommended cut-off values (see Table 2), further supporting good model fit. Given that the GFI and CFI closely approached their cut-off values, it can be concluded that the four-factor model displayed adequate fit to the data.

In order to ensure adequate item loadings, the final 24-item pool was also subjected to a principal components analysis. Four factors were extracted with eigenvalues supporting retention of all four factors. All factor loadings were significant above the .50 level (see Table 3). Although six items cross-loaded, they differed from their highest loadings by at least .13, with all of these loadings in the .35 to .40 range. These findings add further confidence to the factor structure and item retention of the SISRI-24. All subsequent analyses were therefore based on participant responses for the 24-item pool.

Scale validity. All bivariate correlations are presented in Table 4. In relation to the MLQ search for meaning subscale, low to moderate correlations with the total spiritual intelligence score (SI) and subscale scores on the SISRI-24 were observed. In particular, CET was the most significantly related subscale, $r = .39$ ($p < .001$). Correlations with the MLQ presence of meaning subscale were far more significant overall. SI correlated at $r = .44$ ($p < .001$), followed closely by TA and CSE. CET did not correlate significantly with presence of meaning. In complete contrast, PMP correlated positively and significantly with presence of meaning, $r = .65$ ($p < .01$), yet displayed no significant correlation with search for meaning.

Metapersonal self-construal displayed moderate to high positive correlations with SI and all subscales. Of the subscales, the highest correlation occurred with TA, $r = .63$ ($p < .01$). Total mystical experiences, including all potential MSD subscales,

Table 2
Fit Indices for Confirmatory Factor Analysis of the SISRI-24

	χ^2	RMSEA	LCL	UCL	SRMSR	GFI	AGFI	CFI	df
Value	464.68*	.055	.047	.062	.056	.886	.861	.934	246

Note. LCL = RMSEA Lower Confidence Limit; UCL = RMSEA Upper Confidence Limit.

* $p < .0001$

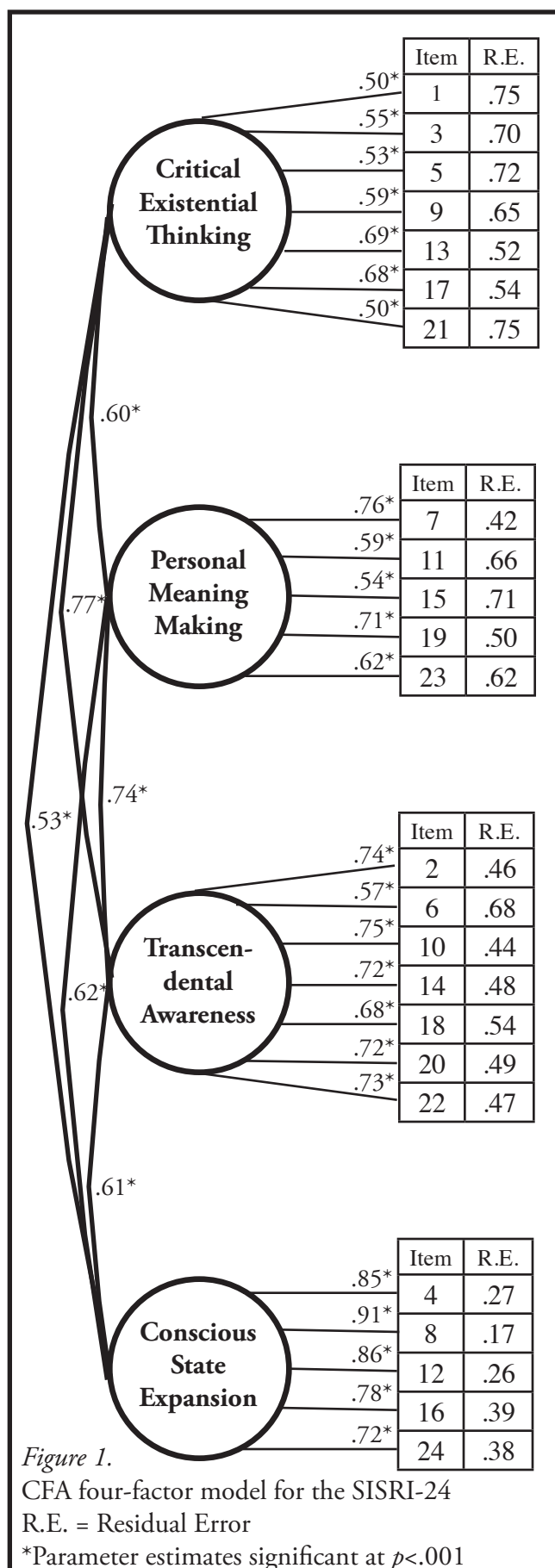


Table 3

Factor Loadings (Principal Components, Varimax Normalized) for the SISRI-24

Item	Factor 1	Factor 2	Factor 3	Factor 4
1	.65*	.14	-.11	.14
2	.38	.14	.28	.59*
3	.73*	.01	.07	.07
4	.18	.77*	.21	.30
5	.52*	.14	.39	.05
6	.07	.24	.04	.66*
7	.16	.22	.63*	.36
8	.11	.85*	.22	.21
9	.53*	.22	.18	.20
10	.31	.16	.37	.59*
11	.06	.21	.78*	-.03
12	.11	.83*	.22	.15
13	.58*	.15	.33	.25
14	.19	.30	.15	.66*
15	-.07	.05	.53*	.40
16	.13	.81*	.12	.17
17	.54*	.29	.12	.31
18	.24	.08	.29	.63*
19	.21	.32	.68*	.14
20	.29	.26	-.01	.70*
21	.65*	-.02	-.03	.18
22	.21	.22	.20	.69*
23	.04	.12	.57*	.39
24	.11	.75*	.13	.25
Eigen-values	8.86	2.12	1.63	1.33

* All marked loadings > .50

also correlated positively and significantly with SI and all SISRI-24 subscales. Total mysticism was most significantly related to the subscales of TA and CSE, as were all five subscales of the MSD. In terms of the AUIE, correlations between the SISRI-24 and intrinsic religiosity exceeded correlations with extrinsic religiosity. The self-deception and impression management subscales of the BIDR displayed very mild positive correlations with SI, $r = .16$ ($p < .05$) and $r = .15$ ($p < .05$), respectively. Of the factors, PMP displayed the highest correlations with social desirability.

Test-retest reliability. A small number of participants ($n = 25$) completed the SISRI on two occasions, separated by a period of four months. Based on the 24-item pool, SI at Time 1 correlated significantly with SI at Time 2, $r = .89$ ($p < .001$). Correlations for the subscales of CET, PMP, TA, and CSE at Time 1 and Time 2 were $.84$ ($p < .001$), $.69$ ($p < .001$), $.84$ ($p < .001$), and $.78$ ($p < .001$), respectively. These correlations support test-retest reliability (DeVellis, 1991).

Inter-subscale correlations. According to leading intelligence theorists, an intelligence should consist of moderately interrelated abilities (Gardner, 1983; Mayer et al., 2000; Sternberg, 1997). In order to investigate the current model and measure's adherence to this criterion, inter-subscale correlations were calculated for the SISRI-24 (see Table 5). All inter-subscale correlations were significant and moderate in strength, ranging from $.42$ to $.61$.

Table 4

Bivariate Correlations among Measures of Validity and SISRI-24 Total and Subscale Scores

Measure: Variable	SI	CET	PMP	TA	CSE
MLQ: Search for Meaning ($n = 271$)	.21**	.39***	.05	.15*	.03
MLQ: Presence of Meaning ($n = 271$)	.44***	.10	.65**	.38***	.38***
MPS: Metapersonal Self-Construct ($n = 270$)	.67**	.44***	.60**	.63**	.48***
MSD: Total Mysticism ($n = 270$)	.63**	.40***	.44***	.59**	.57**
MSD: Extrovertive Mysticism ($n = 270$)	.55**	.36***	.34***	.52**	.53**
MSD: Introvertive Mysticism ($n = 270$)	.58**	.39***	.39***	.52**	.53**
MSD: Religious Interpretation ($n = 270$)	.58**	.33***	.48***	.56**	.49***
MSD: Intense Experiences of Unity ($n = 270$)	.59**	.39***	.38***	.54**	.56**
MSD: Affectively Charged Revelation ($n = 270$)	.60**	.34***	.49***	.58**	.51**
AUIE: Intrinsic Religiosity ($n = 265$)	.48***	.30***	.43***	.45***	.37***
AUIE: Extrinsic Religiosity ($n = 265$)	.21**	.19**	.14*	.20**	.13*
BIDR: Self-Deception ($n = 236$)	.16*	-.04	.27***	.20**	.15*
BIDR: Impression Management ($n = 236$)	.15*	.01	.23***	.22**	.06

Note. SI = Total Spiritual Intelligence; CET = Critical Existential Thinking; PMP = Personal Meaning Production; TA = Transcendental Awareness; CSE = Conscious State Expansion.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 5

Inter-Subscale Bivariate Correlations of the SISRI-24 ($N = 304$)

	CET	PMP	TA	CSE
PMP	.42***	---	.59**	.52**
TA	.61**	.59**	---	.56**
CSE	.43***	.52**	.56**	---

Note. SI = Total Spiritual Intelligence; CET = Critical Existential Thinking; PMP = Personal Meaning Production; TA = Transcendental Awareness; CSE = Conscious State Expansion.

** $p < .01$; *** $p < .001$

Demographic analyses. Demographic characteristics were further investigated for their relationship to the SISRI-24. Of mention was the finding that age displayed positive and significant correlations with SI, $r = .28$ ($p < .001$), as well as CET, PMP, TA, and CSE, $r = .11$ ($p < .05$), $r = .25$ ($p < .001$), $r = .28$ ($p < .001$), and $r = .26$ ($p < .001$), respectively. No significant differences were observed between males and females for SI, CET, PMP, TA, or CSE scores (t -tests did not reach significance).

Discussion

Beginning with an over-inclusive pool of 84 items, analyses of item distributions and factor structure resulted in a final 24-item version of the SISRI, supporting the proposed model of spiritual intelligence and Hypothesis 1. As the SISRI was reduced in size, alpha was also reduced to a more desirable level of .92 (Clark & Watson, 1995), suggesting that the 24 items of the SISRI interrelate and combine to measure a single construct. Split-half and test-retest reliability were also well supported.

The finding that spiritual intelligence was more significantly related to presence of meaning than search for meaning supports the validity of the SISRI, as presence of meaning is more indicative of an ability to construct meaning and purpose. Based on correlations with the personal meaning production subscale, the validity of this particular capacity and Hypothesis 2 were also supported. Since presence of meaning might be described as an outcome of this capacity, it can be inferred that concurrent validity has been supported as well (DeVellis, 1991). Strong positive correlations were observed between the metapersonal self and spiritual intelligence, further supporting the scale's convergent validity and Hypothesis 3. Of the subscales, the MPS correlated most significantly with transcendental awareness. This supports the validity of this particular capacity, which involves the perception of both a transcendental self and interconnectedness, two qualities related to metapersonal self-construal (DeCicco & Stroink, 2007).

Hypothesis 4 was also confirmed. Highly significant and positive correlations were observed between conscious state expansion and mystical experiences, including all subscales of the MSD, supporting convergent validity. These findings may lend further support to the criterion-related validity of conscious state expansion, as theory dictates that mystical experiences are the products of this capacity. The finding that spiritual intelligence was more significantly related to intrinsic religiosity than extrinsic religiosity verifies

Hypothesis 5 and supports construct validity. The relationship is also indicative of spiritual intelligence as an internalized set of components related to spirituality. In spite of the significance, it should be noted that neither intrinsic nor extrinsic orientations displayed high correlations with spiritual intelligence. This further validates the construct, which is theoretically distinct from religiosity.

Indicators of social desirability revealed low correlations with scores on the SISRI-24. While social desirability may have played a slight role in responses, these correlations do not merit great concern due to their size. Nevertheless, findings warrant further investigation of social desirability in subsequent studies of the SISRI-24.

Correlations with established psychometric scales have supported convergent, divergent, and criterion-related validity. As Clark and Watson (1995) noted, however, the validation of a scale should be an ongoing interest in the establishment of a new measure. Additional indicators of theoretically related constructs, such as altruism (Vaughan, 2002), openness to experience (Noble, 2000), death acceptance (Reker, Peacock, & Wong, 1987), and self-expansiveness (Friedman, 1983) should be investigated. Due to the theoretical position that various intelligences should be distinct but moderately related (Gardner, 1983; Mayer et al., 2000), the SISRI-24 should be investigated in relation to measures of emotional intelligence, IQ, and other previously proposed multiple intelligences, a critical step in the validation of this construct.

The four components of spiritual intelligence were observed to moderately interrelate, a criterion suggested by Gardner (1983) and Mayer et al. (2000) in the establishment of new intelligences. This also supports the inclusion of critical existential thinking within the framework of a spiritual ability set, which contrasts Halama and Strizenec's (2004) position that spiritual intelligence is either a distinct ability set or a component of a broader existential intelligence. A significant positive correlation was also observed between spiritual intelligence and age, lending potential support to the development of spiritual intelligence over the lifespan. Although low, this correlation may be indicative of the continuing development of spiritual intelligence in early adulthood, which reflects models of spiritual development proposed by Helminiak (1987) and Alexander et al. (1990). Future research should investigate this relationship by means of longitudinal studies.

One major limitation of this research was its exclusive sampling of Canadian university students. Although Clark and Watson (1995) claimed that student populations serve as appropriate participant pools for scale development, the scale's factor structure and validity should be investigated in a community sample, so as to confirm its appropriateness for such populations. Furthermore, cross-cultural research is needed in order to confirm the scale's universal utility. Examining the SISRI-24 in populations expected to be high in spiritual intelligence (e.g., meditation groups) would further aid in the scale's validation. Although the scale has been developed free of religious terminology, information regarding its validity across religious groups would be highly informative. Language and culture may ultimately represent the greatest barriers to the scale's universal application (e.g., the word "consciousness" may prove a challenge in cross-cultural research).

The focus of the current model has been on cognitive ability as opposed to preferred ways of behaving (i.e., traits; Mayer & Salovey, 1993), reflecting criteria for intelligence as noted by Mayer et al. (2000) in their proposed model of emotional intelligence. This criterion serves to delineate intelligence from aspects of the human mind which might be better placed under the umbrella of personality or "non-intellectual attainments" (Mayer et al., 2000, p. 269). A cognitive focus also brings one closer to identifying innate, universal features of the human mind which are free of culture-specific attitudes, beliefs, and experiences. Such a focus, however, may result in the interpretation that key aspects of spirituality (e.g., forgiveness, altruism, compassion) have been mistakenly omitted. This is not the case. Rather, these variables represent important outcomes and correlates of spiritual intelligence, further aiding in the organization of spirituality within the field of psychology. Unfortunately, problems arise with measurement, in so much that self-report measures are limited in their ability to directly capture cognitive skills. Although currently premature, future research should strive to establish performance-based measures of spiritual capacities so as to reduce self-report biases (e.g., overestimation of one's abilities). This may further aid in the development of methods for fostering spiritual capacities in applied settings.

Much like early notions of social and emotional intelligence (e.g., Goleman, 1995; Salovey & Mayer, 1990), leading intelligence theorists remain hesitant to accept a spiritual ability set (e.g., Gardner, 2000; Mayer, 2000). As Selman et al. (2005) note, however,

"neither IQ nor [emotional intelligence], separately or in combination, is enough to explain the full complexity of human intelligence, nor the vast richness of the human soul and imagination" (p. 23). The recent influx of publications on spiritual intelligence (e.g., Amram, 2007; Emmons, 2000a; Nadel, 2004; Noble, 2000; Vaughan, 2002; Wolman, 2001; Zohar & Marshall, 2000) has further emphasized the need for the construct's accurate identification. The current model and measure have provided new insight and support, contributing to the viability of a construct which merges spirituality and intelligence, two aspects of human psychology that have often been at considerable odds.

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Appendix

The Spiritual Intelligence Self-Report Inventory (SISRI-24)

Read each statement carefully and choose which one of the five possible responses best reflects you. Please answer honestly and make responses based on how you actually are rather than how you would like to be.

- 0 – Not at all true of me
- 1 – Not very true of me
- 2 – Somewhat true of me
- 3 – Very true of me
- 4 – Completely true of me

- (CET) 1. I have often questioned or pondered the nature of reality.
- (TA) 2. I recognize aspects of myself that are deeper than my physical body.
- (CET) 3. I have spent time contemplating the purpose or reason for my existence.
- (CSE) 4. I am able to enter higher states of consciousness or awareness.
- (CET) 5. I am able to deeply contemplate what happens after death.
- (TA) 6. It is difficult for me to sense anything other than the physical and material.*
- (PMP) 7. My ability to find meaning and purpose in life helps me adapt to stressful situations.
- (CSE) 8. I can control when I enter higher states of consciousness or awareness.
- (CET) 9. I have developed my own theories about such things as life, death, reality, and existence.
- (TA) 10. I am aware of a deeper connection between myself and other people.
- (PMP) 11. I am able to define a purpose or reason for my life.

- (CSE) 12. I am able to move freely between levels of consciousness or awareness.
- (CET) 13. I frequently contemplate the meaning of events in my life.
- (TA) 14. I define myself by my deeper, non-physical self.
- (PMP) 15. When I experience a failure, I am still able to find meaning in it.
- (CSE) 16. I often see issues and choices more clearly while in higher states of consciousness/awareness.
- (CET) 17. I have often contemplated the relationship between human beings and the rest of the universe.
- (TA) 18. I am highly aware of the nonmaterial aspects of life.
- (PMP) 19. I am able to make decisions according to my purpose in life.
- (TA) 20. I recognize qualities in people which are more meaningful than their body, personality, or emotions.
- (CET) 21. I have deeply contemplated whether or not there is some greater power or force (e.g., god, goddess, divine being, higher energy, etc.).
- (TA) 22. Recognizing the nonmaterial aspects of life helps me feel centered.
- (PMP) 23. I am able to find meaning and purpose in my everyday experiences.
- (CSE) 24. I have developed my own techniques for entering higher states of consciousness or awareness.

Note. Left-hand column indicates corresponding subscales and should not be included in formal use. CET = Critical Existential Thinking; PMP = Personal Meaning Production; TA = Transcendental Awareness; CSE = Conscious State Expansion. A total Spiritual Intelligence score is calculated by summing all subscale scores. Blank lines should be provided for participant responding.

* Item is reverse-scored.

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