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The Relationships Among Cognitive, Spiritual, and Wisdom Development in Adults

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THE RELATIONSHIPS AMONG COGNITIVE, SPIRITUAL, AND WISDOM DEVELOPMENT IN ADULTS

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ABSTRACT

This study explored whether (1) adult cognitive development correlates with spiritual development, (2) wisdom development mediates the relationship, and (3) age, gender, education level, socioeconomic status, or religious denomination are associated with level of cognitive, wisdom, or spiritual development. University students and alumni (N = 134) completed a demographic questionnaire, the Model of Hierarchical Complexity Helper-Person Problem (Commons & Pekkar, 2004), the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002), and the Self-Assessed Wisdom Scale (Webster, 2003). This study hypothesized that wisdom, understood to derive from both personality qualities and life experience, mediates the influence of cognitive development on spiritual. This research hoped to provide empirical support for understanding the direction and degree of influence of cognitive, wisdom, and spiritual development.

Using structural equation modeling, spiritual development was measured only as awareness of God. Cognitive development correlated significantly with spiritual awareness with moderate effect size. An inverse relationship was found between wisdom development and spiritual awareness. Wisdom development did not mediate the impact of cognitive development on spiritual awareness. Gender, age, education level, socioeconomic status, and religious affiliation were not associated with cognitive, wisdom, or spiritual development.

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Chapter 1

Theoretical Background

This study explores the relationship between adult cognitive development as measured by the Commons Model of Hierarchical Complexity (Commons & Pekkar, 2004) and adult spiritual development as measured by the Christian-based Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002). The study asks (a) whether level of cognitive development is associated with level of spiritual development, and (b) whether wisdom mediates the relationship between cognitive and spiritual development in adults. Cognitive development here is based in neo-Piagetian theory. Spiritual development is theoretically understood as object relations maturity and contemplative spiritual awareness (Hall, 2004, 2007). Social science literature includes empirical studies of cognitive/moral development as measured by the Commons Model of Hierarchical Complexity and of spiritual/religious development as measured by the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002), but not of the association between them. In addition, the study asks whether demographic variables significantly associate with level of cognitive, spiritual, or wisdom development.

Why Consider Spirituality

Spirituality may be taken to include religion: “a person’s thoughts, feelings, and behaviors related to concern about, a search for, or a striving for understanding and relatedness to the transcendent (Hill et al., 2000)” (Saunders, Miller, & Bright, 2010, p. 356). In both mental and medical health, spirituality and religion are increasingly recognized as important to clients, so increasingly necessary to incorporate in practice (e.g., Pargament, 2007). More than 80% of Americans report that in their lives religion is either “fairly” or “very” important (Gallup Organization, 2009). Many patients considering medical treatment want doctors to discuss spiritual and religious concerns, because of the bearing of these dimensions on medical decisions (MacLean et al., 2003). Mental health patients, according to several surveys, consider spiritually oriented conversations in psychotherapy to be appropriate, even beneficial (Rose, Westefeld, & Ansley, 2001). Some patients, anxious that clinicians might not respect their spirituality or religion, report that they hesitate for that reason to pursue mental health treatment at all (American Association of Pastoral Counselors, 2005; Saunders, Miller, & Brights, 2010).

Spirituality and religious practice has been found to correlate with decrease in psychological distress, depression, anxiety, substance abuse, and suicide, and with enhanced hope, optimism, wellbeing, and coping capacity (e.g., Rew & Wong, 2006). Studies also show that spirituality and religious practice can associate with psychological difficulties, in some individuals and circumstances increasing anxiety, guilt, and religious obsessions and compulsions (e.g., Exline & Rose, 2005; Saunders, Miller, & Bright, 2010).

Clients' spiritual and religious beliefs and practices are primary components of their cultural identity (Ponteretto, Casas, Suzucki, & Alexander, 2001). According to the APA Ethics Code, Principle E: "psychologists are aware of and respect cultural, individual, and role differences, also those derived from religion" (American Psychological Association, 2002, p. 1063) and take these factors into account in psychological practice. The Joint Commission mandates for accredited healthcare institutions, that providers conduct a spiritual assessment (see Appendix A). Spiritual and religious beliefs and practices affect social association as well as personal philosophy and understanding of adversity (Hathaway, Scott, & Garver, 2004), and must be taken into account in both establishing a therapeutic alliance and planning interventions (Knox, Catlin, Cassper, & Schlosser, 2005; Saunders, Miller, & Bright, 2010).

Need for Empirically Supported, Spiritually Concerned Psychological Care

In recent decades spiritually oriented measures and psychotherapies have proliferated in the field, inspiring therapists to integrate interventions that build on the therapeutic power of their clients' faith-based worldviews and promoting psychological progress (Richards & Bergin, 2005; Sperry & Shafranske, 2005). Spiritually oriented psychological interventions might include conducting a spiritual assessment, consulting with or referring to spiritual leaders, teaching spiritual concepts, encouraging forgiveness, discussing scriptures, teaching mindfulness meditation, encouraging contemplative meditation and prayer, conducting spiritual imagery, and praying privately for clients (Ball & Goodyear, 1991; Richards & Bergin, 2005; Richards & Worthington, 2010, p. 363).

Spiritual perspectives have been integrated with interventions in a wide range of approaches—psychodynamic, cognitive, interpersonal, rational emotive behavior therapy, transpersonal, Jungian, multicultural, and humanistic psychologies (Sperry & Shafranske, 2005). Spiritual approaches have been applied to a wide range of clinical issues and used with varied multicultural and specific client populations (American Psychological Association, 2008; Richards & Bergin, 2000; Richards & Worthington, 2010). Surveys with APA members (Raphel, 2001; Shafranske & Malony, 1990; Shafranske, 2000) and of psychotherapists belonging to particular faith traditions (Ball & Goodyear, 1991; Richards & Potts, 1995) have found that "30% to 90% of practitioners incorporate spiritual interventions into their practices" (Richards & Worthington, 2010, p. 363). Most clinicians integrate spiritual interventions with mainstream therapeutic approaches (Richards & Bergin, 2004, 2005; Sperry & Shafranske, 2005; Worthington, Kurusu, McCullough, & Sandage, 1996; Richards & Worthington, 2010).

Reviews of numerous empirical studies on spirituality and psychotherapy have found few that were outcome studies (Richards & Worthington, 2010). For spiritually oriented psychotherapies to move to the central place in psychological practice that spirituality and religion hold in the lives of most clients, assessments and interventions need to be empirically validated as effective and efficacious. Richards and Worthington (2010) offer compelling reasons why clinicians would do well to assess spiritual outcomes for both spiritually oriented and secular treatments. As APA Division 36 attests, psychologists have been routinely exploring spiritual variables, understanding that clinicians need to respect clients' spiritual preferences and need to be competent to address this area. Prospective clients who are wary of psychotherapy for its perceived

threat to their spiritual sensitivities could be reassured by outcome studies, regarding which psychotherapies do not undermine their spirituality and faith. Psychologists who take spirituality seriously, evaluating whether and how it might be affected by psychotherapy, could gain the trust of spiritual and religious leaders who could then more readily refer clients to them. Assessing whether improvements in spiritual performance might associate with improved therapy outcomes in other areas would be valuable for clinical practice. “The possibility that spiritual growth may help promote and maintain other positive changes in clients’ lives is worthy of further investigation” (Richards & Worthington, 2010, p. 367).

Why Study Cognitive Development

As adults progress in cognitive development, they move into stages that reflect increasing subtlety and nuance, are more tolerant of ambiguity and pluralism, can take in a wider perspective and see things from multiple viewpoints, appreciate paradox and apparent contradiction, move from “either/or” to” both/and,” and without compromising identity or principle, can empathically value divergent, diverse points of view. The individual who functions at a high cognitive level is likely to be wise, perhaps creative, tolerant of incongruities, able to find humor in life, and more peaceful than persons not yet there. Such qualities of higher cognitive development appear strikingly similar to higher spiritual values and characteristics. This study asks whether, empirically, such is actually the case.

Rationale for This Research

This study will contribute empirical data to investigations regarding spiritual development, and will contribute to understanding of the relationship between cognitive

and spiritual development. Results may show the proportions of the undergraduate and graduate population reflected in this research Sample who function at various formal and postformal cognitive stages. Analysis will explore correlation between level of cognitive development according to the neo-Piagetian Model of Hierarchical Complexity and spiritual development according to the object-relations-based Spiritual Assessment Inventory. As a by-product of the study, demographic data for proportions of the population at various cognitive and spiritual levels will also be available (Richards & Worthington, 2010).

This study will offer clinician researchers means of assessing their clients' degree of cognitive and spiritual development. Since the MHC can apply with any content, the level of cognitive development it measures is likely to be valid across domains. Level of spiritual development will apply to spiritual maturity understood in a more restricted sense, according to attachment/object relations theory. For clinicians, this theoretical perspective will be particularly useful in considering assessment and intervention options, whatever symptoms the client may present with. Also useful for treatment planning will be results of the client's wisdom development assessment, yielding valuable insight into their perspective taking, meaning-making, balance, and humor in negotiating the challenges of life. With such results, clinicians may be better able to identify clients' possible deficits and help them progress developmentally in reasoning, wisdom, and spirituality. Since, as we have seen, these components are integral to physiological and psychological health and well-being, strengthening and enhancement of these dimensions for clients will likely affect their progress in a fundamental, comprehensive way.

Stein and Heikkinen (2009) observe that developmental models need to be substantiated by valid and reliable developmental metrics. Since a developmental worldview might significantly impact aspects of theory and practice in the fields of business, human resource management, and educational testing, as well as mental health care, it is important that developmental measures meet quality control standards. Based on an exploratory literature review in developmental metrics, Stein and Heikkinen find that "the LAS [Lectical Assessment System] and HCSS [Hierarchical Complexity Scoring System] are the only metrics that have been calibrated using quantitative indexes of internal consistency . . . the only ones that can be validly and reliably used to assess individuals" (2009, p. 19). The HCSS is the MHC. The LAS is Fischer's adaptation of the MHC exclusively for the linguistic domain, using trained analysts and computerized scoring in the field of education (cf. http://lectica.info). Dawson has adapted the MHC for testing in a range of domains, including business where it is useful for assessing potential managers' level of reasoning skills (Developmental Testing Service, www. devtestservice.com). The present study applies the MHC for therapeutic assessment and mental health care.

Adult Cognitive Development

Among theorists of cognitive development, there seem to be two principal categories of perspectives on adult intellectual development. Static psychometric perspectives consider cognitive functioning to be basically the Same throughout the lifespan. Intelligence is thought to comprise wide mental abilities (general ability [*g*] and capacities like fluid and crystallized intelligence) that are initially measurable during childhood and adolescence and remain relatively stable throughout life (Berg &

Sternberg, 2003; Groth-Marnat, 2003). The other group of perspectives see cognition as growing. These include contextual and neo-Piagetian (or postformal) views which hold that components of an individual's intellectual functioning may change across the lifespan as one integrates feeling and intuitive elements and encounters various contacts that limit or expand experience (Kramer, 2003; Berg & Sternberg, 2003). The contextual perspective sees intelligence developing in interaction with environmental opportunities and constraints. Individuals in more complex work settings have shown gains in intellectual functioning over a 20-year period (Schooler, Mulata, & Oates, 1999). The neo-Piagetian (postformal) perspective identifies reasoning structures beyond formal operations and beyond adolescence. The life challenges adults face—career choice, marriage, and diverse social roles—drive progress in qualitative intellectual development (Berg & Sternberg, 2003; Commons & Richards, 2002; Commons & Bresette, 2006). Gardner has popularized a theory of multiple intelligences which, however, has been found to describe not discriminable unitary intelligences, but rather abilities, talents, or personality characteristics (Visser, Ashton, & Vernon, 2006).

According to the neo-Piagetian perspective, individuals progress over the lifespan in their understanding of reality and of the nature of knowledge, self, and emotions. Cognitive growth seems to progress with stage-like discontinuities. There is a growing consensus that adult intellectual development may be characterized by qualitative changes from more "concrete and undifferentiated ways of thinking to more contextualized and dynamic systems that integrate objective and subjective ways of understanding" (Berg & Sternberg, 2003, p. 111; Cook-Greuter, 2000; Shedlock & Cornelius, 2003).

Consensus in developmental theory finds that self-understanding also develops. The middle-aged individual may attain more intricate ways of integrating emotion and synthesizing mind and body experiences (Berg & Sternberg, 2003; Kramer, 2003). In Loevinger's (1976) schema, an individual's more complex self-concept is thought to be associated with higher measured crystallized and fluid intelligence, and with higher degrees of ego development (Hauser, 1976). Adult developmental progression focuses on postformal stages.

Postformal stages of cognitive development. Piagetian stages of cognitive development consist in sensorimotor, preoperational, concrete operational, and formal operational stages. Neo-Piagetian thought adds postformal operational stages (Commons & Bresette, 2006). For these postformal stages, different theorists offer different stages and components beyond formal operations. There is difference of opinion as to what the postformal stages are, what are the mechanisms for change, and for clearly identifiable ways of determining what constitutes a more complex or higher level of thinking (Berg & Sternberg, 2003).

Postformal (neo-Piagetian) thought involves a synthesis and integration of reasoning with affective, interpersonal, and intuitive dimensions of cognition. Development generally evolves from somewhat categorical thinking in adolescence to seeing life later in more relativistic terms (Berg & Sternberg, 2003). "Neo-Piagetian and postformal theories of cognitive development suggest that advances in cognition are domain-specific, dependent on individual experience, and can occur at any point in the lifespan" (Cartwright, 2001, p. 213).

The Model of Hierarchical Complexity

The Model of Hierarchical Complexity (MHC) developed by Commons and colleagues is built on the idea that the tasks in which people engage can be understood as hierarchically ordered. The hierarchical complexity of tasks is a way of analyzing the human intellectual capacity required to solve a problem or complete a task. In the field of developmental psychology, traditional theory generally presents stages merely as *descriptions* of sequential behavioral changes (Commons, Trudeau, Stein, Richards, & Krause, 1998). The Model of Hierarchical Complexity (MHC) attempts to provide an *explanation* of the stages of intellectual operation.

Based on the General Stage Model of development (Commons & Richards, 1984), the MHC, according to its authors, provides a system for scoring stages of reasoning in any domain and cultural context. Scoring is based on the participant's performance on a task--the mathematical, hierarchical complexity of their organizing of information. The participant's level of complexity in information processing represents their score at a particular developmental complexity stage (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Historical roots. The historical roots of the Model of Hierarchical Complexity as a stage theory are found in mathematics and logic (cf. Brown, 2004). The Greek philosopher Thales (640-546 B.C.E.) of Miletus, is considered the founder of the deductive science of mathematics. One progressed in mathematics by demonstrating the logical correctness of calculations. Plato (424-347 B.C.E.) circumvented the scientific method of direct observation by pointing to ideal knowledge as more real than anything accessible to sense impressions. Aristotle (384-322 B.C.E.) systematized logical

reasoning, setting rules for inference, emphasizing the need for axioms and definitions. The Model of Hierarchical Complexity follows Plato's concept of the ideal, Thales' grasp of mathematics as deductive method, and Aristotle's careful formulation of rules for logic (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

MHC events. The MHC is a quantitative behavioral developmental theory based on events. Events can be behavioral constructs, such as stimuli, actions, or consequences. Some events may be neither stimuli nor responses. Generally, the notion of events is broader than the environmentally based stimulus and response of behaviorism. And if MHC theory is not behavioristic, it is also not mentalistic and does not look for stage operation in verbalizations that can be associated with Piagetian mental schemata (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005). The MHC is a general "yardstick" free of content, that is associated with Piagetian schemas (Ingersoll, 2010, personal communication).

Commons et al. (2005) define events as perturbations that are potentially detectable—capable of being observed or witnessed by two independent means of detection. A perturbation (astronomy and physics) is a "small force or other influence that modifies the otherwise simple motion of some object. The term is also used for the effect produced, e.g., a change in the object's energy or path of motion" (www.answers.com/topic/perturbation). Two means or paths are required in order to establish happenings within the field of empirical science. "An event can be Said to be real in a scientific sense only if it is detectable by two independent paths" (Commons et al., 2005, p. 3).

There are purely personal subjective experiences. People generally, while seeing, thinking, or dreaming, think of what they see, think, or dream as real (Stickgold, 1999).

For example, if someone Says that his brother from far away has come to visit, there is one path of detection, his report. If the person does not have a camera, telephone, or other means of verifying what he Says, and no one else sees his brother, the listener might suspect a hallucination. At least one other path is necesSary to confirm that his brother has actually come (Commons et al., 2005, p. 2).

Other fields use alternate ways of knowing. Mathematics, logic, and philosophy acquire knowledge analytically, without need for data or experience in a fundamental sense. Fields such as art, literature, dance, music, and religion acquire knowledge phenomenologically: content is experienced by an individual, at times interacting with the environment. Only one independent path of detection is required. Actions or behaviors of an individual can be observed, but this does not prove that the hypothetical "cauSal" event is actual (Commons et al., 2005, p. 3)

The MHC relates performance stage (the stage at which the participant operates) to the hierarchical order of task complexity (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005). The Fischer Dynamic Skills theory, based on the MHC, explains that "a skill is a property of an individual-in-a-social-context" (http://kahuna.merrimack.edu/mmascolo). Skills are not structures, but develop independently at different rates in different domains. Lower-level skills coordinate hierarchically into higher-order skills, following a sequence similar to the progressive developmental order. Derived from the Model of Hierarchical Complexity, Fischer's model claims to provide "a set of conceptual and empirical tools for identifying the structure, content, and developmental level of virtually any set of actions or thoughts . . . within particular social contexts and domains of action" (http://kahuna.merrimac.edu/mascolo).

Developmental sequence. Piaget's (1954, 1976) work in developmental psychology clearly determined that development proceeds in an invariant sequence regardless of culture or content.

> (S)uccessive embeddings and step-by-step reconstructions are characteristic of most organic growth. (A)ction as well as its conceptualization extracts its elements from earlier sources. (W)e encounter mechanisms that repeat themselves on successive clearly hierarchical levels. Abstractions from the previous level are formed and enriched through hitherto nonexistent combinations (Piaget, 1976, pp. 347-349).

As additional theorists, such as Kohlberg (1981), Kegan (1994), Loevinger (1998), and Cook-Greuter (1990) proposed stage models specific to a variety of domains, cross-content standardization in research became more challenging (cf. Commons et al., 2005, pp. 35-36; Hoare, 2006, pp. 260-261). A broad model of developmental assessment was needed, to allow emergence of patterns and themes, and to apply cross-culturally. The MHC offers "a standard method of examining the univerSal pattern of development" (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 4). The MHC grounds the order of stages in hierarchical complexity criteria in models from mathematics (Coombs, Dawes, & Tversky, 1970) and information science (Commons & Richards, 1984; LindSay & Norman, 1977; Commons & Rodriguez, 1990, 1993). The participant's stage score is based on the complexity of their task performance (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Cross-domain measurement. Since the MHC assesses development according to the individual's stage of performance on tasks of a given order of hierarchical complexity

in organizing information, Commons et al. (2005) hypothesize that the model can be used to evaluate developmental stage performance for any domain, in any culture. This claim is based on the MHC's non-association with any domain-specific information, but rather with "analysis of the complexity of the participant's attempted solution to a task of specific complexity" (p. 4). Performance stage is determined by analysis of task demands met rather than by conjecturing about the participant's mental structure/schema, from observing what they do or Say. The individual who successfully fulfills the subtasks of a task, in the required sequence, meets criteria for the developmental level that corresponds to the task (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Hierarchical complexity scoring can be conducted in any knowledge domain because hierarchical order of abstraction and logical structure guide scoring, rather than the identification of particular conceptual content as in conventional domain-based systems (Dawson-Tunik, 2006, pp. 443-444). Cross-cultural developmentalists; psychologists; learning theorists, perception researchers, and history of science historians; as well as educators, therapists, and anthropologists can use the MHC to quantitatively assess developmental stage (Commons et al., 2005, p. 4).

This model uses principles that are mathematically describable and performance measures that are quantitative. MHC differs from other developmental theories primarily in two ways: (a) task and performance are deliberately differentiated, and (b) the basic unit of analysis is simplified--the event rather than an action presumably caused by a hypothetical mental structure. The event is defined in explicit and basic terms, with few assumptions (Commons & Miller, 1998).

Because the MHC purports to apply generally across domains, investigators examined whether the hierarchical complexity scoring system works with the Same performance dimensions as do other developmental scales. Five validation studies found that the MHC and its predecessor the general stage system (Commons et al., 1995) do evaluate the Same performance dimension as content-related stage scoring systems. Dawson (2001) used a think-aloud procedure with 43 texts to compare scoring behavior of three raters trained in Kohlberg's standard issue scoring system with five raters following the general stage scoring system. For each text a mean score was derived for each rater group—one rater scoring according to moral and interpersonal constructs, and the other making complexity assessments. Mean scores 95% of the time differed no more than one complexity level (r = .94) (Dawson-Tunik, 2006).

In a second study, Dawson (2002) scored three separate interviews of 209 individuals aged 5 to 86, using the MHC, Armon's (1984) good life scoring system, and Kohlberg's standard issue scoring system. Results showed correlations of .90 and .92 between the good life and standard issue, and the MHC systems. Patterns in attaining comparable moral stages, good life stages, and complexity levels, as well as strong correlations, Dawson argued, showed that the three systems assessed the Same underlying dimension of hierarchical complexity (Dawson-Tunik, 2006).

In a third study, Dawson et al. (2003) used 378 moral judgment interviews from participants aged 5 to 86, scored according to the standard (moral) issue and the hierarchical complexity scoring systems. A correlation of .92 was found between scores of the two systems. This suggested that the two scoring systems assess essentially the Same performance dimension. The hierarchical complexity system was able to find more

stage-like developmental spurts and plateaus than did the standard issue scoring system (Dawson-Tunik, 2006).

Dawson's fourth study (2002) examined the association between hierarchical complexity levels met and reflective judgment stages (Kitchener & King, 1990). Based on 209 interviews of adolescents and adults, investigators found a correlation of .84 between reflective judgment and complexity level scores. Ninety percent of the time, reflective judgment and complexity level scores varied only within one reflective judgment stage. This was higher than the interrater agreement rate (77%) within one reflective judgment stage (Kitchener & King, 1990; Dawson-Tunik, 2006).

Two subsequent studies investigated the hierarchical complexity scoring system as a valid assessment of cognitive development. Life span studies using a set of 747 moral judgment interviews (Dawson-Tunik et al., 2005) and a set of 246 interviews responding to: "What is a good education?" (Dawson-Tunik, 2004) employed Rasch scaling to examine performance patterns. For both Samples participants ranged from 5 to 86 years of age. The investigators looked for evidence to substantiate the particular developmental sequence, and verification that change was qualitative, rather than simply cumulative. Results found (a) six developmental stages in the age range of 5 to 86; (b) performances were either concentrated at a single level of complexity or bridged two contiguous complexity levels, supporting the specified pattern of level attainment; (c) movement from one complexity level to the next proceeded in a consistent series of spurts and plateaus, showing that individuals tended to spend more time in periods of consolidation and less in transition from one level to another; (d) regardless of one's position in the developmental hierarchy, the task demands were similar in the process of

moving from one complexity level to the next. This demonstrated that in terms of task demands, the distance is the Same from one complexity level to the next. Dawson-Tunik (2006) thought that this legitimated the MHC as an interval scale, meeting a measurement scale requirement for assessing traits in interval units. The question of whether the MHC represents an interval or just an ordinal scale will be addressed later. Both of these studies also demonstrated that two of the complexity levels—single principles and abstract systems—seldom occurred before adulthood. Performance patterns on these two complexity levels were found to be essentially the Same as performance patterns in childhood and adulthood. This supported the claim that the MHC assesses a developmental trait that is unidimensional (Dawson-Tunik, 2006)

MHC stages. According to the Model of Hierarchical Complexity, the stages are essentially the Piagetian stages: sensorimotor, preoperational, concrete operations, formal operations, (plus neo-Piagetian postformal stages) systematic, metasystematic, paradigmatic, and cross-paradigmatic. Richards and Commons (1984) describe postformal thinking in terms of systems. They claim that higher-stage thinking cannot be reduced to lower-stage thinking. In advancing to a higher stage, one can conceptualize new notions that would not have been understood at a lower stage.

The MHC postulates 15 stages (Table 1) including stage 0, calculatory. The first four (0-3) are equivalent to Piaget's sensorimotor stage of infants and toddlers. Adolescents and adults might perform at any subsequent stage. Piaget's pre-operational stage corresponds to MHC stages 4-6; his concrete operational stage matches MHC stages 7-9; and his formal operational stage corresponds to MHC stages 9-11. The MHC

adds three postformal stages to Piaget's model (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Table 1.Stages According to the Model of Hierarchical Complexity

	Abstract	Formal	Systematic	Metasystematic	Paradig-matic	Cross-paradig-matic	Trans-cenden tal
Commons & Richards (1984)	9 (=4a)	10 (=4b)	11 (=5a)	12 (=5b)	13 (=6a)	14 (=6b)	
Sonnert & Commons (1994)	Group	Bureaucratic	Institutional	Universal	Dialogical		
Inhelder & Piaget (1958)	Formal III-A	Formal III-B	Postformal	Polyvalent logic; system of systems			
Fischer, Hand, & Russell (1984)	7	8	9	10			
Sternberg (1984)		First-order relational reasoning		Second-order relational reasoning			
Kohlberg (1981)	3 Mutuality	3/4	4 Social system	5 Prior rights/social contract 6 Universal ethical principles			
Banack (1994)	4	5	6	7			
Pascual-Leone (1983)	Late concrete	Formal and late concrete	Pre-dialectical	Dialectical			
Armon (1984)	3 Affective mutuality	3/4	4 Individuality	5 Autonomy		6 Universal categories	
Powell (1984)	Early formal	Formal	Stage 4a Interactive empathy	Category operations [?]			
Labouvie-Vief (1984)		Intra-systematic	Inter-systematic	Autonomous			
Arlin (1984)	3a Low formal: (problem-solving)	3b High formal	4a Postformal (problem-finding)	4b Relativism of thought 4c Over-generalization 4d Displacement of concepts	4e Late postformal (dialectical		
Sinnot (1984)		Formal	Relativisitic /relativized systems, metalevel rules	Unified theory: interpretation of contradictory levels			
Basseches (1984)	Phase 1b: formal early foundations	Phase 2: intermediate dialectical schemes	Phase 3: 2 out of 3 clusters of advanced dialectical schemes	Phase 4: advanced dialectical thinking			
Koplowitz (1984)		Formal	Systems	General systems		Unitary concepts	
King & Kitchener (2002)	4	5	6	7			

Kegan (1994)	3: interpersonal	3/4	4: institutional	5: interindividual			
Loevinger (1998)	Conformist-conscientious	Conscientious	Individualistic	Autonomous integrated			Transcen-dental
Cook-Greuter (1990)	3/4	4	4/5	5	5/6		6
Gray (1999, personal com-munication	Early formal	Formal	Systematic	Metasystematic			
Bond (1999, personal com-munication)	Early formal	Formal	Systematic	Metasystematic			
Dawson (1998)	9	10	11	12	13	14	
Kallio (1991, 1995)	Formal 1	Formal 2	Formal 3 generalized formal	Postformal			
Demetriou (1990, 1995)							
Broughton (1977, 1984)	3 person vs. inner self	4 dualist or positivist; cynical, mechanistic	5 inner observer differentiated from ego	6 mind & body experience of an integrated self			
Belensky, Clinchy, Goldberger, Tarule, women's ways of knowing (1997)	Position 3 subjective	Transition	Position 4 procedural (separate & connected)	Position 5 constructed			

(Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 18. Used with permission.)

The following explanation is paraphrased from Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 4). In infancy and early childhood, people normally pass through stages 0-5. There are six stages from the beginning of schooling (stage 6) to adulthood (stage 11) (Commons & Richards, 2002).

- Calculatory stage (0): Simple arithmetic with 0's and 1's, within the capability even of machines.
- Sensory and motor stage (1): The infant sees or touches shapes, makes general discriminations, and babbles.

- Circular sensory and motor stage (2): The infant reaches and grasps. From these actions, gestures emerge.
- Sensory-motor stage (3): The toddler associates actions with vocalizations, for instance, making sounds while holding an object.
- Nominal stage (4): The individual Says or "water" begin to interrelate.
- Sentential stage (5): The individual forms phrases and short sentences. They use pronouns and Say numbers and letters in order
- Pre-operational stage (6): Sentences become longer.
- Primary stage (7): The individual can speak up to a paragraph. They may organize utterances into stories which might correspond to reality.
- Concrete stage (8): The individual may coordinate two primary stage operations. They may negotiate simple deals with elementary outcomes for each participant in mind. Social norms for prices or values are not factored in.

  The following stage descriptions—abstract through metasystematic—integrate those in Torbert and Associates (2004) with explanations in the Hierarchical Complexity Scoring System. These stages, most prevalent among the majority of adults, include examples taken from attempts to define "community" (Ross, 2006).

- Abstract stage (9): The individual introduces traits, personalities, stereotypes, and clichés; when describing items, uses quantifiers (all, some, most, none). They talk about place, time, act, actor, type, state. They make categorical statements, such as "everyone knows that." They pursue group belonging, position, status, and adhere to the in-group. They refer to "everyone in my group," or "what would others think?"

and express preferences. For example, “community” means people activities and involvement, where you can spend time together.

- Formal operational stage (10): Logic and empirical support influence discussions. Reasoning is expressed with phrases like, if . . . then, thus, because, therefore, or the reasons were . . . . The individual looks for causes and solves for one, cauSal variable; they demonstrate dogmatism, and acknowledge responses only from recognized authorities. Thinking to attain results tends to be long-term. Few individuals are believed to function at stages beyond formal operations, with complex multiple systems models (Kallio, 1995; Kallio & Helkama, 1991; Commons, Miller, Goodheart, & Danaher-Gilpin, 2005). For example, “community” means this particular geographic community bounded by the various surrounding municipalities [empirical boundaries constitute the entity, with logic based in geographical relatedness] (Ross, 2006).
- Systematic stage (11): New concepts are abstractions that coordinate abstract factors or variables into systems of relationships. Matrices or models illustrate relations. Ideas and events are seen in wider context (current and historical). Multiple relationships are understood relative to one another; relations among variables coalesce as systems. The individual infrequently judges others; self is acknowledged to be part of a system, with an individual and collective shadow. Common words are “functional,” “structural,” “economic.” For example, “community” might mean a residential, housing community for the people who work there. In that context, it means a planned, intentional place to reside, to work, and to relate to people (Ross, 2006).

Example 2: The systematic stage concept can ask whether the "common factors" approach to therapist characteristics is adequate to assess empirically supported therapy (EST) outcomes. Logic at this stage coordinates several dimensions of two or more abstract concepts. One needs to systematically take into account both "common factors" qualities and EST expectations in order to determine whether an additional variable must be included.

- Metasystematic stage (12): New concepts or metasystems are higher principles that coherently coordinate formal systems. Principles are at a higher level than customs and regulations. The individual at this stage considers and compares viewpoints and systems in a logical [meta-analytic] way. They observe that perspectives may be systems, and numerous viewpoints metasystems. They coordinate "short-term goals with long-term process orientations" (Ross, 2006, p. 29). Words like "beneficence," "integrity," and "autonomy" are common. The logic of this stage is to identify one principle or axiom that coordinates several systems. For example, "community" means a group of people living in an area where a certain proportion go to the Same school [system], pay taxes [system], and have their taxes contribute to public services in the area [system]. [A metasystem from coordinated system relations]. Example 2. "Community" might mean all the various constituencies included in a particular geographical collection of individuals. It could encompass a lot of different viewpoints and interests [a metasystem of parties with varied interests and perspectives] (Ross, 2006). For instance, beneficence and integrity are fundamental to ethics codes in the practice of psychology. Beneficence and integrity are seen as facets of the broader principle of ethical probity.

- Paradigmatic stage (13): From multiple metasystems, new models emerge on which to base theory or methodology. When metasystems are understood to be incomplete but not fully or consistently repairable by simply adding to them, a new paradigm may develop. Individuals who reason at the paradigmatic level may need to integrate seemingly disparate fields of knowledge into a coordinated new unity. One needs to see laws operating on both the environment and oneself as reciprocally affected participant. For example, in political theory a national foreign policy perspective based on global interdependence would seem to represent a paradigm shift from post-World War II balance-of-power strategizing.
- Cross-paradigmatic stage (14): Cross-paradigmatic actions coordinate multiple paradigms into a new field, or substantially transform an old one. For example, interdisciplinary studies coordinating the fields of psychology with the brain and the immune system developed the new field of psychoneuroimmunology.

Fostering development. Fostering a group's progression to a later level of cognitive complexity involves leading them to new insights and more complex reasoning. This most often would involve moving from formal to systematic or metasystematic level. A new logic takes hold: more knowledgeable and astute reflection on causes and about particular and communal accountability for community circumstances. "We need to change *what* we talk about as much as we need to change *how* we talk and think, what we do and how we do it, to address issues at all the levels of their systemic complexity" (Ross, 2006, p. 16).

An example: a woman in change of promoting the image of her business was distressed that loiterers were hanging around in front of her store. When she walked up to

them she observed that some were her high school classmates. She wondered whether, had she treated them better in high school, they might not be where they are today. The woman's reasoning had a simple quality with its nostalgic "if only." She was reasoning at the *formal* "if . . . then" stage. Should she move to a more complex stage, she might coordinate a *system* of related factors. She might reflect on contemporary students' relational behavior, and the effects of having been treated poorly on ways they may be expected to interact. She might consider ways to remedy the effects of her unfortunate past behavior in dealing with present-day loiterers. She might estimate the town's future image and likelihood of business success (Ross, 2006).

Also important in fostering adult development is attention to the dynamics of eliciting interest, motivation, and hope. A case study showing stage progression is illustrated by the systems thinking approach to leadership in business and education, described by Senge (2006). Employees at a manufacturing company went every day to work, did their job, earned money to support their family, and year by year their lives at work changed little. When a new transformational leader assumed his management position, he talked to workers and listened to their needs and dreams, asked for their input and took it seriously, inspired them to commit to what they were doing (Northouse, 2007). With their help he developed a company creed: "To recognize our responsibilities as industrialists, to foster progress, to promote the general welfare of society, and to devote ourselves to the further development of world culture." The workers composed a company song, about "sending our goods to the people of the world, endlessly and continuously, like water from a fountain" (Senge, 2006, p. 208). They developed a larger purpose, a shared vision. Their in-service trainings were on topics such as "fairness,"

"harmony and cooperation," "struggle for betterment," "courtesy and humility," and "gratitude." The workers called these their "spiritual values." Productivity and morale significantly improved. The workers, with encouraging leadership, underwent a shift in thinking, from individualistic to collective, interdependent thinking, seeing what they do as a contribution to the larger whole and the good of society. Since the workers now understood what they did in a larger, systemic context, most moved from prior lower levels of cognition to the systematic level, and some may have advanced to a metasystematic level.

At higher cognitive levels, it becomes clear that "every complex issue is made up of many multivariate systems of relations operating simultaneously in the society, whether locally or at a larger scale" (Ross, 2006, p. 21). We return now to analysis of the Model of Hierarchical Complexity and its principal components.

MHC building on Piaget's stage theory. The MHC is behavior analytic. It analyzes behavior including verbalization, without attempting to infer mental constructions or schemata. By concerning itself simply with task analyses, the MHC shows that more complex behaviors organize and order less complex behaviors. It is important to keep in mind also, that organisms develop in response to the environment. The organism's sensitivity to particular environmental events and relationships changes according to their developmental stage (Commons & Miller, 2001). In the first example above, had the student loiterers experienced more social acceptance in high school, they might have developed a more self-directed, purposeful work ethic, and been motivated to take initiative rather than chancing social interaction with a passive, indeterminate stance. In the second example, the workers inspired by their transformational leader were clearly

influenced by one another. Their camaraderie in discovering and owning new-found spiritual meaning in their work, caught on to create a collective cohesion.

The MHC does not take a mentalistic view. Developmental psychology has been concerned with what grows and progressively advances, and in what order. The MHC aims to offer a quantitative behavior-analytic developmental theory that addresses both the sequence of development and why it occurs. The principal hypothesis of developmental sequence has been Piaget's mentalistic theory (1954, 1976). The MHC extends and precisely specifies Piaget's dialectical model of stage change, but makes it behavioral rather than mentalistic.

Piaget centered his theory on the process of equilibration, which he considered the "central problem of intellectual development" (1985). The focus of his theoretical model was "*reflective abstraction,* a component of equilibration in which a person reflects and builds on earlier structures to create new, qualitatively distinct, structures (Piaget, 1970, 2000)" (Dawson-Tunik, Fischer, & Stein, 2004, p. 257).

By *reflective abstraction* Piaget meant using coordinations of a less complex structure to build a more complex structure by a reprocessing of knowledge (Piaget, 1970). Reasoning structures are related in a hierarchy of progressively higher cognitive abilities. The coordinating process generates a new level of intellectual complexity that emerges from a simpler level. "Piaget held that the development of knowledge takes the 'form of an *uninterrupted sequence of reflective abstractions*' and thus a new developmental sequence (Piaget, 1972). He understood *reflective abstraction* as central in the cognitive process that generates the structures of intelligence (Campbell, 2001)" (Dawson-Tunik, Fischer, & Stein, 2004, p. 257).

In the movement from a simpler to a more complex level, Piaget described microdevelopmental processes: figurative and operative functions. Figurative operations comprise states of cognition that are taken at face value, such as perception or imitation. Operative functions work with perceptions, dynamically transforming perceptions to construct and coordinate knowledge, often to find out something new. Reflective abstraction builds knowledge from coordinating figurative and operative functions, "resulting in the hierarchical emergence of new knowledge" (p. 258).

Piaget considered cognitive stage transition to arise from "the necessity of an equilibration between assimilation [existing internal structures] and accommodation [restructuring in response to input]" (Piaget, 2000; Dawson-Tunik, Fischer, & Stein, 2004, p. 259). Piaget acknowledged that a confluence of characteristics manifested a general operating system or *structure d'ensemble.* He noted that a single person does not usually demonstrate only the qualities of a single level. He thought that it was the decalage of varied cognitive subsystems that necessitated equilibration.

So, equilibration and reflective abstraction were the principal constructs of Piagetian theory. Stages were heuristics for studying cognitive developmental processes, hierarchical integrations of prior cognitive activities into new more complex forms (Piaget, 1958). Hierarchical integration was a construct, not just about knowledge complexification, but related to the structured ordering of behavior, with potential for understanding the functional development of the mind (Dawson-Tunik, Fischer, & Stein, 2004).

MHC characteristics. The individual who moves through the postformal stages understands relationships more equitably. A functional interdependence develops, in

which interaction contributes to others' needs and preferences. When conflicts are not resolved, they are seen within a co-constructed perspective. One can at least see their opponent's position and understand how they arrived at it (Commons & Richards, 2002). Postformal research (Arlin, 1975, 1977, 1984) finds that "a replacement process takes place whereby problem-solving operations disappear and problem-finding operations appear." Basseches (1980/1984) argues that "in postformal thinkers, structure can never be temporally crystallized, but it can still be used to interpret society, nature, and the self as organizations in constant transformation" (Commons, Trudeau, Stein, & Krause, 1998, p. 202). Contemporary societal "challenges increasingly call for transition to postformal and postconventional responses on the part of both individuals and institutions" (Commons & Richards, 2002, p. 159).

MHC axioms. The MHC of tasks and their corresponding stages of performance are based on three main axioms (Commons, Trudeau, Stein, Richards, & Krause, 1998). These are:

1. The most hierarchically complex task and its required action must be defined in terms of the less hierarchically complex tasks (formation of actions from prerequisites).

2. A task-required action must organize two or more distinct, earlier actions in the chain (relational composition).

3. The order of the organizing action and what it acts upon in the chain is fixed and non-arbitrary (order of definition) (Commons & Miller, 2001, p. 227).

The hierarchical organization of behavioral task analyses can form a paradigm for stage and stage transition. Using its axioms, the MHC can assign to every task, regardless of domain, an order of hierarchical complexity. The orders labeled by natural numbers

are separated by equally-spaced gaps, and suggest the performance levels implied in stage theories (Commons & Pekker, 2004). The equal spacing of gaps can be seen in Rasch analysis, described in Chapter Three.

Stage transition. The MHC requires tasks that are "quantal" (mathematical, information science-based) in nature: they are either completed or not. There is no intermediate state. One can only change performance by whole stage (Commons & Richards, 2002). A quantal notion of stage suggests a similar nature of stage transition. Transition behavior consists of alternations in previous-stage behavior. As transition proceeds, the alternations increase in frequency until the previous stage behaviors are "smashed" together. Once the smashed-together pieces became coordinated, new-stage behavior can be Said to have formed. Individuals generally change performance by whole stage. Properties of stages are:

> (1) Sequentiality does not allow for skipping stages. (2) Performance on tasks of different hierarchical complexity should cluster in well-defined groups. (3) Because task orders have gaps, there exist no intermediate stages of performances, i.e., stages are discontinuous. But stage transition can occur between stages. (4) Participants generally perform in a consistent manner across tasks of the Same hierarchical complexity. Most performances are predominantly at their most frequent stage of performance (Commons & Pekker, 2004, p. 12).

Scoring of behavior according to the MHC, in any cross-cultural setting and any domain, is based not on conjecture about the participant's mental schemata or structural level, but rather on the mathematical hierarchical complexity of information reflected in

behavior. The participant's stage of developmental complexity is manifested in their task performance (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Stage transition usually does not happen quickly, except in infancy. Most people have been found to transition approximately every two years (Armon & Dawson, 1997), although very few reach stage 12 by the age of 24. Few move easily to a higher stage because of a large difficulty gap between one stage and the next (Commons & Richards, 2002). Stage progression is also discouraged by society which supplies an environment to match the individual's age/occupation-predominant stage of hierarchical complexity. Schools from elementary to college level, for example, adjust task demands to general capacities of their population. As our earlier examples of stage transition show, and a number of studies have demonstrated, adult cognitive development can be actively and successfully promoted. An explanation of the process will be included below.

Transition emotions. Emotions are likely to accompany each stage transition. As potential for transition approaches, the individual perceives a decrease in rate of reinforcement for their habituated behavior level. One anticipates failure and becomes defensive, fearful of navigating the transition steps. One might also not experience reinforcement, from simply not perceiving in others a performance stage beyond one's own. One would not feel supported in risking stage advance. Also, organizations might fail to reinforce performance at a higher stage. Next-stage ideas and behaviors might never get off the ground (Commons & Richards, 2002).

When one continues to perform successfully at their characteristic stage, static coping maintains their level. Solving new problems may require transition to a higher stage, calling for dynamic coping. For transition between stages: deconstruction and

construction, see Table 2. In order to advance from one stage to the next, behaviors need to be combined in a new, non-arbitrary qualitatively different order. Steps describe orders of specific transition strategies that lead to stage progression (Commons & Richards, 2002).

Table 2. Transition Steps

Step	Sub-step	Relation	Name	
0 (4)		A = a' with b'	Temporary equilibrium point (thesis)	Previous stage synthesis does not solve all tasks. (Deconstruction begins.) Extinction process
1		b	Negation or complementation (antithesis)	Negation or complementation, inversion, or alternate thesis. Participant forms a second synthesis of previous stage actions (antithesis)
2		a or b	Relativism (alternation of thesis and antithesis)	Relativism. Alternates among thesis and antithesis. The schemes coexist, but there is no coordination of them. (alternation of thesis and antithesis)
3		a and b	Smash (attempts at synthesis	The following substeps are transitions in synthesis.
	1		Hits and excess false alarms and misses	Elements from a and b are included in a nonsystematic, noncoordinated manner. Incorporates various subsets of all the possible elements.
	2		Hits and excess false alarms	Incorporates subsets producing hits at stage *n*. Basis for exclusion not sharp. Overgeneralization
	3		Correct rejections and excess misses	Incorporates subsets that produce correct rejections at stage *n.* Produces misses. Basis for inclusion not sharp. Undergeneralization
4 (0)	4	a with b	New temporary equilibrium (synthesis and new thesis)	New temporary equilibrium (synthesis and new thesis)

(Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 38. Used with permission.)

Steps in stage transition. The first three steps (0-2) constitute deconstruction of prior stage behavior (Swan & Benack, 2002). New stage behavior is constructed in the last two steps (3-4) (Commons & Richards, 2002). At the last step 4 (A with B) one feels Satisfied, at least until demands for further development arise. At step 0 (A), one continues to operate at the previous step 4, but with reduced reinforcement. One may continue to feel gratified by mastery of step 4, but for inability to meet requirements of a higher-level task, also feels inept and inadequate in that area. At step 1 (B), in addition to feeling inept and inadequate or upset, one feels dejected. One may defensively want to

give up, to avoid frustration. At step 2 (A or B) one sees that a problem might be solved, but not how. One may feel a lack of control, anxious and conflicted. “Relativism” characterizes a sense of uncertainty about whether one can be independent, or is rather dependent on an ambiguous set of circumstances. At step 3 (A and B) one begins to resolve the problem with some degree of creativity.

> One works through this step in three substeps:
>
> The first substep: “getting chaotic.” One will try anything. One often just “smashes” or lumps together various elements, without a sense of how they might be integrated. Smashing may feel desperate, like needing to make a life raft out of whatever may be at hand. The second substep is “learning what to do.” One begins to produce valid results and feels excited to find the correct direction, while there is still frustration with making mistakes. The third substep involves “learning when and where to do” each action. One may feel confused, but not lost, or may feel both confused and helpless. One may have a template, but must avoid overgeneralization. The fourth substep (A with B) achieves coordination and one feels gratified for having successfully combined correct components (Commons & Richards, 2002, pp. 164-165).

Examples of stage scoring. The following are examples of MHC scoring (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005). Subsequent theorists have applied the MHC and Fischer Skills Theory (Fischer, 1980; Fischer & Bidell, 2006) to the field of education by developing the Lectical Assessment System (Dawson, 1998). The examples given here exemplify basic stage scoring that may resemble, although they are not, Lectical Assessment profiles (cf. http://devtestservice.org).

1. Good Education, Stage 11 Systematic, Step 1 Negation: Transition to Stage 12 Metasystematic

Participant: Teacher Says, “Look, we’re going to tell you things that you can write down. And if you forget, you can look them up in the textbook. I promise I won’t tell you anything that’s not in a book you can look up. And you write them down and memorize them. And then we’re going to have an exam. And you tell us back, and we’ll check off whether you told us right, and whether you told us everything. And if you did, then we’ll give you an A.”

“Now this is a very Safe process for all concerned. There’s very little risk for the faculty. I mean anybody can give an adequate lecture of that type. So it won’t reveal you as a bad teacher unless you just don’t prepare. It’s also very Safe for the student, right? Because if you do your homework, if you don’t screw around and play tennis and waste your time, you can pass almost any course that is taught that way. And the conspiracy is that neither party, neither the professor nor the student do anything to reveal that not much learning has gone on. What do I mean by not much learning has gone on? What I mean is, when you confront people with problems for which the knowledge you have transmitted is supposed to be useful later on, they can’t solve them.

Analysis: Participant includes components from an educational system based on predictable outcomes and rote memorization, as well as components from a system with risk. Participant does not coordinate these components and gives as examples subsets of different ways of education and assessing students (Commons, Miller, Goodheart, and Danaher-Gilpin, 2005, p. 23).

2. Good Education, Stage 12 Metasystematic, Step 0 (4)

Participant: All are theories that rest upon different ethical assumptions of what society is and what the role of law and society is and what either has achieved which often blends into what people think it ought to achieve. And people create their histories which are open to many interpretations which often, you know, consist of the way they think of what the society ought to be. So it's just become a prevalent way of thinking about law. To understand why the rule Says one thing rather than another or the standard or the principle or why the Constitution or whatever interprets it to mean this rather than (that), can't be understood with any strict system that excludes history, morals, political theory, even psychology, sociology, a whole variety of perceptions that inform the lawmaker, whether you're talking with a judge or a legislator.

Analysis: Pass at Metasystematic Stage 12. Participant successfully describes a cohesive system with sharply defined criteria for what determines a good or bad legal education. Participant successfully integrates the goal of legal competence with the goal of broadening the law student's understanding of his/her role in society (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 26).

The current MHC stage formulation ends at stage 14. It appears that there are limits to "the number of times a series of components can be turned into a combination" (Commons & Richards, 2002, p. 165). Training studies (Colby & Kohlberg, 1987) find that effectiveness of training reaches a limit at a given age. The limit for any individual appears to be heritable (Bouchard, 1997; Bouchard, Lykken, McGue, & Segal, 1990,

1991). When identical twins are given training, a ceiling is reached where continued training only brings the slower twin closer to the limit of the first (Commons & Richards, 2002).

Levels of support. A number of contingencies drive stage transition or promote performance at higher stages of development. Memory, reflection, and action must all increase concomitantly (Commons et al., 2005). Levels of support help foster higher reasoning stages. "Support" here refers to reinforcement for next-stage behavior. Support contingencies might include showing the inadequacy of present-stage behavior, or introducing models of next-stage behavior with its reinforcing emotional and environmental factors (Commons et al., 2005). In many domains, original innovation has been particularly difficult because at the time of an innovation there was little if any knowledge about how to solve a given problem. With hindsight, the accomplishments of innovators appear less daunting than they were at the time. Today knowledge is abundantly available. Even simply horizontal additive information increases the likelihood of resources fostering qualitative advance in level of complexity. "Each increase in the level of support reduces the difficulty of doing a task by one stage. Each decrease in the level of support raises the difficulty of doing a task by one stage" (Commons & Richards, 2002; Commons & Bresette, 2006, p. 263). Derived from Vygotsky's concept of scaffolding (1962, 1966), MHC levels of support extended during problem solving are drawn from Arlin (1975, 1984), Fischer et al. (1984), Gewirtz (1969), and Bandura's social learning concept of modeling (1977, 1986). Listed are six levels of support, how support alters otherwise unaided performance, and how the supportive action affects the participant (Commons & Bresette, 2006). (See Table 3.)

Table 3. Levels of Support

Support Name	Change in measured complexity	Form of support	Action	Description
Manipulation	-3	Being moved though each step.	Literally being moved through each step of how to solve a problem.	Part of the stimulus is the push that guides the movement.
Transfer of stimulus control	-2	Being told each step (direct instruction).	Do a task based on a set of verbal instructions or other direct stimuli telling one what to do.	Train a discrimination with one set of stimuli on one task. Use the Same set of stimuli to control performance in another task. Slowly remove the first set of stimuli. This is like an errorless learning procedure (Moore & Goldiamond, 1964; Terrace, 1963).
Pervasive imitation	-1	Being shown.	Includes delayed imitation or observational learning (Gewirtz, 1969). The imitated action may be written, depicted, or otherwise reproduced.	Fischer and Lazerson (1984) call this form of control the optimal level.
Direct	0	No help or support is given.	Problem-solving or hacking (without support).	Fischer and Lazerson (1984) call this the functional level. Most of Piaget's work was at this level.
Problem finding	1	In addition to not getting help, one must discover a task to answer a known question.	Persons are given an issue and asked to give an example of a problem that reflects that issue.	Arlin (1975, 1977, 1984) introduced postformal complexity (systematic order) by requiring the construction of a formal-operational problem without aid or definition.
Question finding	2	In addition to not getting help and having to discover, one must discover the question.	With a known phenomenon, people find a problem and an instance in which to solve that problem.	One has to discriminate the phenomenon clearly enough to create and solve a problem based on that discrimination.
Phenomenon finding	3	No direct stimulus control is possible without a description of the phenomenon.	Discovering a new phenomenon.	No reinforcement history with the phenomenon.

(Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, p. 37. Used with permission.).

Building on Vygotsky's (1966a, 1966b) concept of scaffolding, the MHC includes seven values of stimulus control. These may be understood as levels of autonomy (independence of control) in responding to stimuli. Each level represents the comparative task complexity. Level of support or demand given during problem solving are derived from Arlin (1975, 1984), Fischer et al. (1984), Gewirtz (1969), and Vygotsky (1962; 1966) (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005).

Society and culture offer little support for important innovations because the innovator lacks precedent regarding the tasks surrounding the higher-level task, and reinforcement to pursue change at a level approximately roughly paradigmatic is unlikely. “Absorbing or assimilating an advance created by someone else requires formal operational complexity” (Commons & Bresette, 2006, p. 264).

MHC contributions to developmental psychology. The MHC appears to make two contributions to developmental theory: (a) an explanation for developmental sequences--why some tasks must be performed before others, and (b) a description of the “individual psychology of performance” (Commons & Miller, 1998). Stage measurement benefits in consistency and accuracy from task complexity analysis that is not dependent on participant observation. And in characterizing a unitary progression fundamental to all domains of development, the model defines the core stage requisites in every domain (see Kohlberg & Armon, 1984). The MHC attempts to define stages with few core requirements for each. Such a procedure might facilitate consensus among theorists and allow for systematic description of core stage requirements. A consensually accepted set of axioms defining respective stages might help to establish stage theory criteria against which to measure developmental hypotheses (Commons & Miller, 2001).

According to the MHC, one hierarchical sequence of complexity levels, with structure but independent of content, can address all tasks in all domains (Commons, Trudeau, Stein, & Krause, 1998). The MHC is a hypothesis because all possible domains have not been tested, if that would even be possible. It does have considerable research support, and has not yet been disproven (Commons, personal communication September 16, 2010).

Relatively lower stages of cognitive development, in moral and religious domains, can be associated with tendencies to adopt intolerant attitudes (Day, 2008), while higher levels of cognitive complexity, as we have seen, tend to promote understanding and mutual acceptance (Commons & Richards, 2002). Current research shows that in real-life discussion people prefer the reasoning of others according to the similarity of their levels of cognitive complexity (Day, 2008). Grasp of the principles of human cognitive development could foster mutual understanding, instead of win-lose scenarios with violence in conflicted situations (Day, 2008).

In summary, the Model of Hierarchical Complexity offers a quantitative behavior-analytic model of development that avoids mentalistic explanations. With three main axioms, the MHC defines the nature of stage and stage transition. According to this model, there can be only one possible stage sequence, and gaps are not fillable with intermediate behaviors. Such an analytic measure of developmental stage is beneficial to psychology (Commons & Miller, 2001). Its principal advantages seem to lie in its accuracy, consistency, and generalizability across domains, contexts, and cultures. The MHC includes: (a) a behavior-analytic method, (b) quantal (mathematical, information science-based) complexity rather than mentalistic explanations, (c) axioms, (d) stage sequence, and (e) benefits to developmental psychology.

The Model of Hierarchical Complexity offers (a) a way to analyze and interpret data that can contribute to developmental psychology, (b) a means of understanding cognitive growth and how it might be fostered, and (c) the advantages of appreciating contrast and paradox over conflict and dichotomous thinking (Day, 2008).

Cognitive development measured with an MHC moral dilemma. This study will measure cognitive development according to the MHC with the Helper-Person Problem, a moral dilemma. This study incorporates a moral dimension of development because of its close association with spiritual and religious development (cf. Day, 2002, 2008). Since the MHC is intended to apply across domains, MHC measures in the form of dilemmas with questions to which participants respond, relate to a variety of fields of study. An MHC moral dilemma will be the assessment measure for determining participant stage of cognitive development.

Also supporting use of a moral dilemma is the observation that Kohlberg's levels of moral development are acknowledged to parallel and build on Piaget's cognitive development stages (Mitchell, 1988; Berger, 2005). People's way of reasoning, rather than their particular conclusions, determines their stage of development (Berger, 2005). Kohlberg's preconventional moral reasoning at level one, with its egocentric emphasis on getting rewards and avoiding punishments, corresponds to Piaget's preoperational level of cognitive development. Kohlberg's conventional moral reasoning at level two, focused on social approval and law and order, relates to Piaget's concrete operational thought on current, observable community practice. And Kohlberg's postconventional moral reasoning at level three, about moral principles and ideas, corresponds to Piaget's formal or postformal cognition, which includes logical abstract concepts (Berger, 2005; see Table 4).

Kohlberg analyzed ethical dilemmas. A well-known example is Heinz, whose wife was dying of cancer and in need of an expensive drug that would Save her life. The drug's price was ten times what it had cost to produce. Heinz could not afford the drug,

and asked the druggist to allow him to pay later. The druggist refused. Should Heinz steal it?

Moral development theorists, influenced by postmodernism, prefer a “narrative” approach, emphasizing analysis of moral stories or telling of lived experience rather than abstract reasoning about hypothetical moral dilemmas. A postmodernist approach considers moral experience in unique, individual experience more valuable than the detached conceptual evaluation Kohlberg proposed (see Brown et al., 1992; Day & Tappan, 1996). “A kind of dualism has emerged in the professional literature between what is characterized as this more emotional, relational, and relativistic experience of morality, on one hand and the rational, autonomous, and normative reasoning of morality on the other hand." (Armon & Dawson, 1997, p. 3). Moral experience is understood to have a range of dimensions—rational, emotional, and always relational (Armon & Dawson, 1997).

Kohlberg’s moral levels paralleling Piaget’s cognitive schemata might extend also to levels of spiritual development. Along with cognitive and moral development, levels of spiritual development appear to include elements such as motivation, locus of control, and anticipation of reward or punishment (Mitchell, 1988). This is not to equate moral and spiritual development, which are separate constructs. Having considered the specific form of MHC measurement—a moral dilemma—we return to the global Model of Hierarchical Complexity.

MHC Possible Limitations

The Model of Hierarchical Complexity, with its basic concepts of lower stages defining higher ones, and lower being organized non-arbitrarily by the higher, would

appear to support ongoing use of stage theory to explain the psychology of spiritual/religious development (Day, 2008). The MHC has gone through several revisions, from the 1984 (Commons & Richards) to the 1998 (Commons, Trudeau, Stein, Richards, & Krause) to the 2008 (Commons & Pekker) versions. Commons acknowledges that there has been considerable confusion in grasping the MHC, primarily because it is grounded in mathematics (personal communication, July 16, 2009). Unfortunately, as he recognizes, most people do not know enough math to find fault with it. Commons' colleagues Narens, Bachhelder, and Luce have raised some possible objections, in reviews of proposed articles, in the discussion group Adult Development, or in personal communications or emails. Narens, for example, pointed out that the MHC model needed to have some way to be disproved.

> The disproof of the MHC would consist of applying Doignon, J. P., & Falmange, J. C. (2006/1965), *Knowledge Spaces* (New York: Houghton Mifflin). The analysis would show that there were missing orders or extra orders. Of course, these errors could be easily fixed (Commons, personal communication, September 14, 2010).

Luce has been the major critic, as well as supporter of the MHC. Luce showed that the hierarchical complexity model generated only an ordinal, not an interval scale. Commons believes the most recent editions of the MHC (2008) to be close to completely correct, taking into account several minor adjustments suggested by Luce. Otherwise, considering the MHC as a comprehensive model of cognitive development, Commons and colleagues continue to take criticisms into account and to adjust the model accordingly.

> Since all possible domains have not been tested, the MHC is technically still considered a hypothesis. A substantial amount of research has been done, about 60 sequences. The only areas where (MHC researchers) have problems are the low orders that apply to animals. Everything above and including preoperational has been studied to death by the Piagetians, minus the postformal stages. The concordance table (See Table 1, p. 17) shows that there is not much controversy about the postformal stages (Commons, personal communication, September 14, 2010).

Commons is currently not aware of any major criticism of the model (personal communication, July 16, 2009).

Spiritual Development

According to the model for the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002), quality of relationship with God can be understood developmentally as consisting in three stages: (a) unstable, (b) grandiose, and (c) realistic acceptance. Theory supporting the SAI spiritual development model is based on the understanding that development can be considered psychologically, spiritually, or both. For this study, Christianity-based spiritual development is understood theistically, based on belief that God exists and is personal. In order to broaden the SAI to a spiritual rather than religious focus, non-Christian participants are accommodated by asking them to mentally substitute "higher power" for "God" and "place of worship" for "church."

Model of implicit relational representations. Hall et al. (2005) observe that "implicit relational knowledge, rather than explicit theological teaching, is foundational for the quality of one's experience of attachment to God" (Miner, 2007, p. 120). Early

attachment relationships with caregivers are represented in structures that are cognitive and affective, with conscious and unconscious components. These representations later in life serve as filters that generate expectations about persons sought as security providers or emotionally significant others—family members, close friends, therapists (Hall, 2004). Since each person relates directly to God who can serve as a legitimate attachment figure (Kirkpatrick, 1991), God/human attachment is not totally dependent on relationships with human caregivers. Since humans are by nature relational, spiritual maturity must also be relational (Hall & Edwards, 1996). Early object relations patterns nevertheless ordinarily do implicitly impact subsequent relating (Miner, 2007; Hall, Fujikawa, Halcrow, Hill, & Delaney, 2009).

As one grows, the internal working model may begin to incorporate other attachment relationships. Attachment in adulthood includes a broader range of attachment figures, not only the individual's parents (Czikszentmihilyi & Larson, 1984). Several studies have indicated that attachment patterns influence not only adult romantic relationships, but also friendships and spiritual relationships (Hazen & Shaver, 1987; Kirkpatrick & Shaver, 1992; Vaillant, 2007).

The theory of implicit relational representations (Hall, 2004) offers a psychospiritual theory of human development that can ground empirical research. Numerous studies and meta-analyses report a positive association between religion/spirituality and mental health (cf. Bergin, 1983; Gartner, Larson, & Allen, 1991; Larson et al., 1998), although religion can also negatively impact mental health (Ellis, 1980), as when religious beliefs combine with preexisting mental health problems (Bergin, Stinchfield, Gaskin, Masters, & Sullivan, 1988; Richards, Smith, & Davis, 1989;

Richards & Bergin, 2005). Most religions directly pursue spiritual health and maturity rather than mental health outcomes. The latter might accrue secondarily but are not intentionally sought (Hill & Pargament, 2003). For religions, the final goal needs to be spiritual maturity or "realized religion" (Chamberlain & Hall, 2000; Hall, 2004).

Hall's (2004) model of implicit relational representations addresses individuals' capacity for mature relatedness to God and others. Supported by several lines of research (cf. Westen, 1998), it helps explain associations between involvement in mature Christian spirituality and, secondarily, beneficial mental health outcomes. In what may be called a relational metapsychology, Hall (2007) traces the current convergence of object relations and attachment theories (cf. Blatt & Levy, 2003; Fonagy, 2001; Goodman, 2002; Scharff & Scharff, 1998) and recent discoveries in the neurobiology of emotion and affective information processing (Hall, 2004). He shows that there are several organizing principles supported by empirical research, for a theory of implicit relational representations (Hall, Fujikawa, Halcrow, Hill, & Delaney, 2009).

These principles contend that people develop through emotionally important relationships. We internalize close relationships through codes of emotional information processing. Implicit relational representations parallel early relational experiences encoded prior to language acquisition and share their emotional tone. We act spontaneously in subsequent patterns of relating, out of a preconscious sense of how important relationships work and their emotional meaning. Our implicit relational representations are automatic, and prior theorists show a psychological-spiritual unity of personality (Carter, 1974; Shackelford, 1978; Pingleton, 1984; Benner, 1998; Hall, Fujikawa, Halcrow, Hill, & Delaney, 2009). The emotional appraisal of meaning that

govern(s) one's experience of relationship with God are the Same psychological processes outlined in the implicit relational theory, that govern one's relationships with self and others. Psychological processes have spiritual roots, such as the longing to transcend one's self in relationship with God (Benner, 1998) (Hall, Fujikawa, Halcrow, Hill, & Delaney, 2009, p. 233).

Spiritual Assessment Inventory. The Spiritual Assessment Inventory (Hall & Edwards, 2002) is based on a psychospiritual development model (Hall, 2004) and the theory of implicit relational representations derived from the recent confluence of object relations and attachment theories applied to religion and spirituality. The SAI assumes a theistic, Christian worldview. It incorporates experiential consciousness of God, a principle of Christian scripture-based contemplative spirituality (Hall, Reiss, & Haviland, 2007) and attachment/object relations maturity (Hall & Edwards, 1996, 2002).

Construct and belief. Because the SAI takes a faith-based Christian perspective, an objection might be raised that it deals with beliefs, and psychology deals with constructs, not beliefs. A construct is a "theoretical statement concerning some underlying, unobservable aspect of an individual's characteristics or of his internal state" (*Encyclopedia Britannica*), such as intelligence or self-esteem. Belief means "acceptance by the mind that something is true or real, often underpinned by an emotional or spiritual sense of certainty" (*Encarta Dictionary*).

Psychology has shown God to be a legitimate attachment figure (Kirkpatrick, 1998, 2005). "(A)ttachment theory is a fundamentally *psychological* theory. Applying (religious beliefs) to it offers a theoretical context for understanding religion in terms of the Same processes and principles as other domains of motivation, emotion, and

behavior" (Kirkpatrick, 2005, p. 18). Attachment to God, with implied awareness of God, then, can be considered a psychological construct. For those using the SAI with faith that a personal God relates to humans according to a Christian worldview, awareness of God becomes a psychological construct that can be measured.

Measurement of spiritual constructs is a second challenge for researchers. "(T)he attachment-related aspects of Christian beliefs about God are . . . probably measured more validly and reliably by scales tapping specific aspects of one's perceived relationship with God as derived directly from attachment theory (see Rowatt & Kirkpatrick, 2002)" (Kirkpatrick, 2005, p. 351). If a participant might self-report degree of attachment to or awareness of a human significant other, they can also report degree of awareness of God. Both reports will be subjective. Just as a self-report about attachment or awareness might seem implausible to an observer not acquainted with the participant's significant other, a self-report about awareness of God might not seem credible to an observer who does not believe in God. Self-report instruments are subjective and limited. While the SAI has been shown to be psychometrically sound, its being a self-report measure must be included among limitations of this study. The SAI has been used in numerous studies to measure spiritual maturity, based on its two main dimensions of (a) awareness of God and (b) quality of relating to God, realistic acceptance being its highest level.

Measuring the two dimensions of awareness and quality of relationship with God, the SAI has five subscales. These assess the quality dimension, evaluating the degree to which the individual responds with (a) realistic acceptance, (b) disappointment, (c) grandiosity, and/or (d) instability. (e) Impression management is a validity scale. The

attachment/object-relations-based SAI measures developmental level of relationship with God. An integrated psychospiritual development model, the SAI combines a traditional spiritual dimension (awareness) with a traditional psychological one (relational maturity) (Hall & Edwards, 2002).

The model addresses two questions: “To what degree is one aware of God in daily life?” and “What is the quality of one’s relationship with God?” Spiritual maturity integrates awareness of God and relational qualities. Pursuit of spiritual maturity involves paying attention to one’s way of relating to God: emotional response to life circumstances, and dialogue with God. In the SAI, awareness of God’s presence may correspond with mature realized spirituality (Benner, 1998; Conn, 1999), taking God as guiding direction for life (Hall & Edwards, 1996, 2002).

Development driven by significant relationships. “People are fundamentally motivated by, and develop in the context of emotionally significant relationships” (Hall, 2004, p. 68). Two basic dimensions of development begin to emerge at the earliest developmental period: self-definition and capacity to relate (Blatt & Levy, 2003; Hall, 2004).

> According to object relations theory, the infant experiences body/self, other-awareness, and association between self and others. Mental representations of significant persons *(object representations),* feelings connected with them, and the infant’s perception of their relationships with others, are internally configured in “'representational worlds' (Sandler & Rosenblatt, 1962) that are then a guide to navigate through social relationships” (Hill & Hall, 2002, p. 369).

Both object relations and attachment theory highlight the importance of primary caregiver mirroring (Klein, 1932; Bion, 1967; Winnicott, 1956). Moderate rather than perfect caregiver responsiveness has been shown to best promote internalizing of self-regulatory processes (Erikson, 1964; Isabella & Belsky, 1991; Kohut, 1977; Winnicott, 1956; Beebe & Lachmann, 2002).

Bowlby theorized that from internalized attachment experiences, the infant develops internal working models (IWMs) that shape future relationships beyond the family of origin (Scharff & Scharff, 1998). The IWMs of Bowlby's attachment theory are essentially the mental representations of earlier object relations theory.

> Both attachment theory (e.g., Ainsworth, 1969; Bowlby, 1980; Bretherton, 1985) and object relations theory (e.g., Blatt, 1974; Fairbairn, 1952; Jacobson, 1964; Kernberg, 1976; Winnicott, 1960) postulate that IWMs or mental representations of self and others emerge from early relationships with caregivers and then act as heuristic guides for subsequent interpersonal relationships, influencing expectations, feelings, and general patterns of behavior (Diamond & Blatt, 1994; Levy et al., 1998; Slade & Aber, 1992) (Blatt & Levy, 2003, p.121).

Achievement of a consistent, flexible sense of self depends on achievement of emotional regulation (Schore, 2009). A stable foundation for affect regulation enables ongoing positive relational interactions at higher levels of interpersonal maturity (Bromberg, 2006; Schore, 2009).

Early shaping of later attachment patterns. Implicit relational representations, particularly from early relationships with caregivers, shape emotional meaning appraisal and subsequent relational patterns. Ainsworth (1985) defined characteristics of

attachment: (a) the attached individual tries to be physically close to the caregiver, especially when afraid; (b) the caregiver affords protection and nurturance (a haven of Safety) and (c) refuge (a secure base); (d) with risk of separation the attached individual feels anxious; and (e) absence of the attachment figure is likely to grieve the attached individual (Kirkpatrick, 2005). Object relations ongoingly affect adult life experience in work, affiliations, marriage, and raising a family (Scharff & Scharff, 1998). Attachment style has been found to predict various aspects of psychosocial growth, including affect regulation (e.g., Mikulincer & Florian, 1998), marital Satisfaction (e.g., Alexandrov, Cowan, & Cowan, 2005), altruism (e.g., Mikulincer, Shaver, Gillath, & Mitzberg, 2005), caregiving (e.g., Kunce & Shaver, 1994), and happiness (Webster, 1998, 2007).

Attachment research (Ainsworth, Bichor, Waters, & Wall, 1978) using the Strange Situation experiment has found patterns of secure and insecure attachment, with insecure typified as avoidant, resistant or ambivalent, and disorganized (Main & Solomon, 1990). Through longitudinal studies with measures such as the Adult Attachment Interview (George, Kaplan, & Main, 1996), implicit relational knowing has been found to continue throughout life, shaping out-of-awareness the individual's subjective experience of their interpersonal relationships (Hall, 2004, 2007). Studies (Main, Kaplan, & Cassidy, 1985; Fonagy, Steele, & Steele, 1991) find that patterns of relationship may then be passed on inter-generationally (Hall, 2004).

Implicit representations of self and others. "A large body of data suggests that unconscious affect regulation is more essential than conscious emotion regulation in human survival functions" (Schore, 1994, 2003, 2007, 2009, p. 112). Relatively

successful patterns of interpersonal interaction establish a consistent basis for interactive emotional control that is unconsciously internalized as implicit.

> Implicit relational representations are repetitions of relational experiences, sharing a common affective core, that are conceptually encoded in the mind as non-propositional meaning structures. They are the memory basis for implicit relational knowledge, our 'gut-level' sense of how significant relationships work (Hall, 2004, p. 71).

Integrating the limbic system, implicit memory operations function unconsciously. Implicit relational representations are stored in emotionally based images and nonverbal meaning structures. An individual retrieving implicit memory does not sense that they are remembering (Siegel, 1999).

> Implicit memory involves parts of the brain that do not require conscious processing during encoding or retrieval. When implicit memory is retrieved, the neural net profiles that are reactivated involve circuits in the brain that are a fundamental part of our everyday experience of life: behaviors, emotions, and images. These implicit elements form part of the foundation for our subjective sense of ourselves: We act, feel, and imagine without recognition of the influence of past experience on our present reality (Siegel, 1999, p. 29).

"Implicit relational representations and knowledge form the foundation of our knowledge of self and others because they are processed automatically and are not under the control of words" (Hall, 2004, pp. 73-74).

> Implicit relational representations are foundational in two senses:

> (a) they are what ultimately determine overall patterns of relationship, and (b) conscious symbolic beliefs do not directly transform them. Implicit relational representations are transformed *directly* only through the Same code of emotional information processing by which they were formed: further implicit relational experiences (Hall, 2004, p. 74).

This reaffirms a primary value of therapy, particularly the therapeutic alliance.

Symbolic beliefs may contradict subsymbolic processes, even as the latter continue to drive experience and behavior (Hall, 2004). To illustrate, a client may claim to have a good relationship with another individual, but in talking about them, nonverbally communicate a different message. Averted eyes, a negative facial expression, difficulty with voice modulation, somewhat incoherent responding could suggest defensiveness rendering suspect the emotional veracity of their verbal claim. With emotionally significant attachment relationships throughout life, discomfort communicated by intensified physiological arousal suggests that implicit relational representations continue unconsciously to affect relational functioning. In therapy, automatic patterns can be apprehended and their meaning altered. They can be reshaped and revised. New expression in words or images can transform their influence on self or others (Hall, 2004).

Neuroplasticity of the nervous system enables interpersonal experiences later in life to impact and alter mental relational models. Healthy, resonant relating in subsequent life stages can repair damaged early attachments (Badenoch, 2008). Empathic attunement can re-wire implicit regulatory patterns at any point in life. Early interpersonal schemata can be repaired both by genetic factors supporting resilience, and by passing but

impactful empathic relationships. “The brain is always seeking integration, and any experience that removes a blockage creates new flow toward complexity (Badenoch, 2008, p. 74).

Psychospiritual development. Addressing the relationship between psychological and spiritual development, a number of theorists (Benner, 1988, 1998; Carter, 1974; Hall & Edwards, 1996; Pingleton, 1984; Shackelford, 1978) observe that persons cannot be segmented into “psychological” and “spiritual” components. “Humans are not purely psychological, but are instead biopsychosocialspiritual creatures (Sperry, 1999)” (Moriarty, 2006, p. 84).

The self may be considered a filter or lens focusing on data that reinforces our sense of identity (Baumeister, 1995). An inclination to be consistent affects all our interactions, including our connection with God. Research finds that individuals with low self-esteem tend to view God negatively; those with high self-esteem tend to a positive relationship with God (Benson & Spilka, 1973; Moriarty, 2006).

God image. The God image, an individual’s Salient emotionally valenced perception of God, may also be thought of as a filter or lens. Since attachment involves resonance or attunement, antenna or Satellite dish might make a better metaphor. The faces and voices of early caregivers are likely to introduce static, to blur, dim out, distort, or destroy the true face and voice of God. One’s God image needs frequently to be cleansed and refurbished to authentically reflect the real God (Moriarty, 2006). Cheston et al. (2003) observe that if image of God impacts psychological well-being, an individual with a negative image or relationship with God is likely to experience negative effects—an emergence or exacerbation of psychological symptoms (Moriarty, 2006).

McDargh (1983) and Spero, from a theistic perspective, contend that if others can influence one's image of God, then conversely, God image can affect one's perspective on self and others. “The individual's relationship to their God representations may impact other internalizations” (p. 262). McDargh (1983) and Spero (1990) suggest that both God image and the real God behind it, influence people and their relationships (Moriarty, 2006).

Asking whether, without dealing explicitly with spirituality, psychotherapy might upgrade God image while also succeeding therapeutically, Cheston, Piedmont, Eanes, & Lavin (2003) found that therapy did both decrease symptoms and enhance positive client God images. After treatment, clients understood God as significantly more sympathetic and loving (Moriarty, 2006). Two recent studies have found, encouragingly, that neither self nor God image are permanently established in childhood. Both, with therapy in adulthood, can be significantly altered (Tisdale et al. [1997] and Cheston, Piedmont, Eanes, & Lavin [2003]; Moriarty, 2006).

A number of authors have found remarkable parallels between psychological and spiritual maturity, particularly from an object relations perspective (Benner, 1988; Conn, 1989; Miller, 1991; Pingleton, 1984; Shackelford, 1978). And level of object relations development and God image have been found to be significantly, positively related to spiritual maturity (Hall & Brokaw, 1995; Hall, Edwards, & Pike, 1996; Hall & Edwards, 1996).

> There appears to be a correspondence between psychological and spiritual operations. Empirical studies find image of God to be positively related to level of object relations development (Brokaw & Edwards, 1994). Given the relationship

> between psychological and spiritual maturity, therapists should be aware that the psychotherapy process will likely impact a client's spiritual life. Thus, therapists would do well to attend to clients' spirituality to the degree that it relates to the psychotherapy context. The results of this study (Hall, Brokaw, Edwards, & Pike, 1998) suggest that the quality of one's relationship with God is highly related to, and may be significantly influenced by one's relational maturity (p. 311).

Object relations theory offers a model of spiritual maturity that is sensitive to relationality (Hall & Edwards, 1996). Spiritual processes, such as emotional meaning appraisal, determine an individual's relationship with God. Such spiritual processes are similar to psychological processes described by implicit relational representations theory that regulate relationship with self and others (Hall, 2004). "As long as God is perceived by believers to be readily accessible as well as responsive, the attachment model is potentially applicable" (Kirkpatrick, 2005, p. 57). A faith perspective understands psychological processes to be rooted in spirituality, in desire for self-transcendence through relationship with God (Benner, 1998).

Challenging the process we have been considering—implicit relational representations—is the fact that symbolization and reflection are central to psychospiritual growth (Hall, 2004). The contents of faith are communicated symbolically, through words. In relational encounters, as we have seen, the first appraisal of meaning originates automatically through the orbitofrontal cortex with implicit relational representations (Schore, 1994). Secondary processes of symbolization and reflection cannot directly alter the implicit relational representations (Bucci, 1997; Stern et al., 1998; Schore, 1994, 2003). Resolution between seemingly opposing processes may

be found in understanding that the acceptance of faith propositions ideally grows into a deepening, expanding whole-person commitment. Whether or not a relationship with God is felt as similar to the caregiver experience, may depend primarily on the believer's implicit relational representations. Depending on faith that may or may not be sensibly experienced, relationship with God that is unfelt may nevertheless be real, even profound (Dubay, 1989).

Emotional, relational appraisal of meaning applies to both psychological and spiritual domains; it fundamentally shapes human life and development.

> It is not possible to separate implicit relational processes from 'spiritual processes,' or to separate 'psychological' and 'spiritual' domains of functioning. Implicit experiences form the *foundation* of the emotional appraisal of meaning in any aspect of spiritual functioning, including one's relationship with God, rather than explicit, symbolic knowledge of God or theology. We would expect one's internal working models, or patterns of relationship, to reliably influence one's spiritual functioning and development in predictable ways (Hall, 2004, p. 75).

Spiritual maturity. Theistic, Christian spiritual maturity in this study involves two dimensions incorporated in the SAI: (a) "awareness of God" as participant in one's life, and (b) "realistic acceptance" as the prominent quality of relationship with God. The SAI understands spiritual maturity, first, as contemplative consciousness of the divine, seeking awareness of God who is always present and active, regardless of human noticing. The awareness component of spiritual maturity consists in hearing God's communication—in other persons or through one's thoughts and feelings. Since, of course, not everything one thinks or feels, even if seemingly positive or virtuous, is

actually divine communication; discernment is necessary. At all levels of development, one can be aware of God's presence and communication, so this would not necessarily mean a highly developed quality of relationship with God. One might be attuned to God's communication yet not relate to God in a spiritually mature way (Hall & Edwards, 1996). The SAI considers "awareness of God" a necessary but not sufficient characteristic of spiritual maturity. Awareness of God must be combined with a mature quality of relationship with God.

Spiritual maturity's second component, quality of relationship with God, entails spiritual growth or progress. One becomes more aware that life and spiritual experience are interconnected. The SAI is based in attachment/object relations theory. Attachment/object-relations-based spiritual maturity involves developmental levels of interpersonal relating. Persons relate to God through awareness of the divine presence and in their quality of interaction and commitment. They relate also to human persons from a particular developmental level of maturity. Their relating both to God and to others is affected by implicit relational representations.

Development may be considered meaning-finding, with the maturity level of each stage a relative achievement of moving beyond embeddedness in the previous stage to attaining characteristics of the next (Kegan, 1982). According to the SAI model, quality of relationship with God can be understood developmentally in three stages: (a) instability, (b) grandiosity, and (c) realistic acceptance. Persons are usually at an (a) unstable stage of maturity as young children (or as adults who have experienced trauma or some form of developmental constriction in their early relationships). They find it hard to see God as consistently, thoroughly loving, and actually do not much trust him (Hall &

Edwards, 1996). Persons who manifest (b) grandiose relationships with an inflated self-importance are typically children or adolescents (or adults with some degree of narcissism). They tend to be preoccupied with God's protecting them and providing for their needs (Hall & Edwards, 1996). Individuals at the developmental stage of (c) realistic acceptance can acknowledge the negative as well as the positive in a valued relationship that they maintain, come what may (Hall & Edwards, 1996). Individuals at this stage typical of late adolescence and adulthood occasionally may or may not feel cared for by God, but nevertheless maintain their confidence in God. Since normally, individuals progress through these three progressively more mature stages, the SAI can be considered a developmental measure. An individual's growth might also be arrested at an earlier stage, either generally or in particular domains of functioning. Immature modes of operation can consolidate into character traits that typify an earlier stage of psychosocial/psychospiritual development. Immaturity then is recognized in the person's failure to think, feel, or behave as would be expected of an individual of their chronological age.

Psychological maturity, at least according to Western values, appears to involve progress in autonomy, appropriate personal relating, problem solving, and ability to meet human needs. Theistic spiritual maturity may include experience of the presence of God with understanding, authentic self-surrender, and commitment (Conn, 1999). Object-relations theorists cited here find a correspondence between spiritual and psychological functioning according to a relational maturity perspective. Psychological and spiritual maturity, though not identical in content, can both be congruent with theistic maturity as expressed in Christian scriptures (Carter, 1974; Hall & Edwards, 1996). The SAI is a

measure for spiritual development understood as psychological maturity based in the object relations/attachment-grounded theory of implicit relational representations. This study suggests, in using the SAI for measuring level of spiritual development, that a positive correlation exists between level of object relations development and spiritual maturity, understood relationally. The developmental maturity of one's relating with other humans is likely to parallel maturity level in relating to God (Hall, Brokaw, & Pike, 1998). Psychological and spiritual functioning are believed to be closely related. In relating to God people use the same psychological processes as with others (Benner, 1988). This understanding of spiritual maturity is quite limited, due to limitations of the measure it uses. There are of course many other, far more comprehensive ways of understanding and measuring spiritual maturity. For the purpose of this study, spiritual maturity is constrained by the definite "ceiling effect" of the SAI, equating "realistic acceptance" with object-relations-based spiritual maturity. Hopefully, despite the limitations of this study, it will make some contribution to the field.

Spiritual maturity, of course, can progress beyond realistic acceptance in quality of relating with God and others, to a high degree of awareness and commitment to God as guiding principle of life. There are alternate definitions of spiritual maturity. Hall (2008), acknowledging the SAI's "ceiling effect," has developed a Spiritual Transformation Inventory with 22 subscales, to measure higher levels of spiritual development. With the SAI, advancing progress in spiritual development presumes that psychologically the individual has attained an adult level of object relations maturity. From the perspective of psychological measurement, the construct of wisdom measurable with the Self-Assessed

Wisdom Scale (SAWS, Webster, 2003, 2007) would seem to capture some elements of progressing maturity in both spirituality and cognition.

The SAI and psychospiritual maturity. A model of psychospiritual maturity based on the theory of implicit relational representations is not intended to be either comprehensive or final, but to encourage further research on Christian spirituality and mental health (Hall, 2004). The SAI is "less about *object-representation* than about object relations: how one behaves in relationship with God" (Beck, 2006, p. 46). The individual with faith who understands God as a transcendent being with whom one can relate, is likely to develop cognitive schemas regarding God, self, and divine-human relationship (Hill & Hall, 2002).

An implicit-relational-representations model of psychospiritual maturity includes several components: religious/spiritual involvement, realized spirituality (Benner, 1998), and positive mental health outcomes. Religious/spiritual involvement refers to aspects of psychosocial growth about which individuals can exercise intentionality. Depending on their level of development, persons may choose to engage in spiritual practices, to be connected with a spiritual community, to be spiritually committed, and to participate in spiritual friendships or mentoring relationships (Hall, 2004). Realized spirituality includes expressing spirituality in a relationship with God and within a faith and community, in specific concrete ways. Manifestations of realized Christian spirituality or spiritual maturity include closeness or attachment to God, positive God image (Lawrence, 1997; Sorenson, 1994), sense of support in a spiritual community, selfless service, and religion/spirituality as a guiding direction for one’s life (Hall, 2002; Hall & Edwards, 1996). Realized religion and/or spiritual maturity, as we have seen, have been found to

predict positive mental health outcomes, such as subjective well-being. These may be byproducts of psychospiritual health that result from involvement in religion and spirituality, and from mature relatedness to God and others (Hall, 2004).

Variability on the dimension of realized Christian spirituality includes, along with religious/spiritual involvement and explicit symbolized spiritual knowledge, also one's implicit relational maturity. Studies using implicit coding systems such as the Differentiated-Relatedness Scale (Blatt & Levy, 2003) and the Adult Attachment Interview (George et al., 1996) provide empirical support for measuring object relations maturity.

> Interestingly, psychoanalytically oriented investigators (Blatt, 1974, 1995; Blatt & Lerner, 1983; Blatt & Auerbach, 2001) combining self- and other representations with Piaget's (1950) cognitive developmental perspective hypothesize that at higher levels, intellectual affective aspects develop increasing accuracy and complexity. Higher levels of self- and other representations emerge and expand from lower. According to the epigenetic theory of development, "representations of self and others can range from global, diffuse, fragmentary, and inflexible to increasingly differentiated, flexible, and hierarchically organized" (Blatt & Levy, 2003, pp. 121-122).

Differentiation and relatedness interact (Blatt & Shichman, 1983; Sander, 1984; Blatt & Blass, 1990, 1996) and progress through the lifespan (see also Kegan, 1982; Ogden, 1986; Mitchell, 1988). Ongoing self-definition and affiliation interaction facilitates maturing advancement in both self- and relational schemas (Blatt & Blass, 1990, 1996; Blatt & Shichman, 1983). "With psychological development, representations

of self and other become increasingly differentiated and integrated and begin to reflect an increased appreciation of mutual relatedness" (Blatt & Levy, 2003, p. 124).

Spiritual maturity occurs as more advanced representations of self and other integrate both positive and negative dimensions. One can more readily tolerate feelings of ambivalence and contradiction regarding self and others. "More integrated and mature representations have greater diversity and complexity" (Blatt & Levy, 2003, p. 122). A more mature relatedness inclines to cooperation, growth in mutuality more willingly understands the other's perspective, and advancing reciprocity is more empathic (Blatt & Blass, 1990, 1996). Maturing, one becomes more aware of participating in "complex relational matrices that determine perceptions, attributions, and the construction of meaning" (Blatt & Levy, 2003, p. 127). This looks strikingly similar to advancement toward higher cognitive levels of the Model of Hierarchical Complexity.

Object relations maturity, in turn, can relate to God image (e.g., Brokaw & Edwards, 1994; Hall & Brokaw, 1995; Rizzuto, 1979), attachment to God (Kirkpatrick & Shaver, 1992), and quality of relationship with God, in developmental context (e.g., Hall & Edwards, 1996, 2002; Hall, 2004). The perspective of implicit relational representations suggests that the individual's experience of relationship with God is corresponds to some degree with their internal working model of attachment. Hall and colleagues propose that "internal working model correspondence is the broadest conceptual framework for understanding attachment (to God), and that this operates at the level of implicit spiritual experience" (Hall, Fuziwara, Halcrow, Hill, & Delaney, 2009, p. 233).

Wisdom Development

The Self-Assessed Wisdom Scale (SAWS, Webster, 2003) operationally defines the hard-to-define construct of wisdom according to five of its characteristics: openness to experience, emotional regulation, critical life experiences, emotional regulation, and humor. Wisdom is understood to be multifaceted, with mutually reinforcing multidimensionality (Baltes & Staudinger, 2000; Taranto, 1989; Webster, 2003). “About as elusive as psychological constructs get” (Sternberg, 1990), wisdom has been defined as “a form of advanced cognitive functioning" (Dittman-Kohli & Baltes, 1990:54), "expertise in the conduct and meaning of life" (Baltes & Staudinger, 2000:124), the art of questioning (Arlin, 1990), the awareness of ignorance (Meacham, 1990), the transformation of intrapersonal, interpersonal, and transpersonal experiences in the domains of personality, cognition, and conation (Achenbaum & Orwoll, 1991)" (Ardelt, 2003, p. 277).

Following an integrative Eastern rather than cognitive-focused Western understanding of the term, wisdom may be seen as a synthesis of cognitive, reflective, and affective dimensions (Clayton & Birren, 1980; Ardelt, 2003). Wisdom is a personal strength believed to increase with age (Baltes, 1993; Baltes & Smith, 1990; Denney, Dew, & Kroupa, 1995; Holliday & Chandler, 1986; Kekes, 1983; Ardelt, 2003). Elders who are wise can accept uncertainty, limitations, age decline, and death (Blazer, 1991) while maintaining integrity derived from experience.

Wisdom’s cognitive aspect includes an individual’s capacity to understand the meaning and significance of what happens intra- and interpersonally. It includes knowledge of human nature, its positives and negatives. Wise persons display intellectual

ability in problem-solving and decision-making and apply themselves intentionally to achieve apt consequences (Webster, 2007). In psychological models of wisdom, two cognitive processes emerge: (a) insight, and (b) awareness of the ambiguous, tentative, and paradoxical aspects of human concerns (Kramer, 2003). The intellectual dimension of wisdom means awareness that knowledge is limited, life unpredictable, human nature ambiguous, and the future uncertain (Ardelt, 2003).

Wisdom's reflective component may be primary; it promotes both cognitive and affective dimensions (Ardelt, 2000, 2003). Reflectiveness knows how to see reality without obstructing distortions, to perceive events and phenomena from varied perspectives, and build self-insight. Gradually, one becomes less self-centered and subjective, projections diminish, one avoids blaming other people and circumstances, and can better understand one's own and others' behavior (Ardelt, 2003). For wisdom's affective dimension, diminishment of egocentricity and a clearer understanding of others generally tend to enhance compassionate love (Csikszentmihalyi & Rathune, 1990; Levitt, 1999; Pascual-Leone, 1990; Ardelt, 2003).

The current study will be based on the model for wisdom of the Self-Assessed Wisdom Scale (SAWS, Webster, 2003, 2007). With theory from conceptual social science literature, it emphasizes five wisdom components: (a) experience, (b) emotional regulation, (c) reminiscence and reflectiveness, (d) openness, and (e) humor (Webster, 2003). While current wisdom research emphasizes mainly cognitive elements (Peterson & Seligman, 2004), the SAWS includes also social, motivational, emotional, and intrapersonal dimensions. A composite score on the SAWS representing these component qualities is taken to reflect degree of wisdom development.

(a) Life experience is a critical component of wisdom. Not simply accumulated experience over a long time, but difficult, morally challenging experience with some measure of reflective depth seems prerequisite to wisdom. An 80- year-old whose life has been privileged and protected will have acquired more general experience than a 25-year-old whose life has been disadvantaged, but the latter may have been forced to look for meaning in hardship and in the process advanced in wisdom (Webster, 2003). Since the SAWS focuses on wisdom that increases with age and maturity, younger students will have less life experience to draw on. Simply because of their relative youth, their scores on the SAWS are likely to be less valid than those of older participants (alumni).

(b) Corresponding to the affective dimension of wisdom, is emotional regulation or affect sensitivity, which many researchers consider key to wisdom (e.g., Ardelt, 1997; Clayton & Birren, 1980; Holliday & Chandler, 1986; Kramer, 1990; Orwoll & Perlmutter, 1990). Wise persons show a refined sensitivity to the subtleties of distinction among feeling states, with capacity to recognize, accept, and express constructively a full and nuanced range of human emotion (Webster, 2003).

(c) Reminiscence and reflectiveness on one's life attends to personal strengths and limitations, and explores life's meaning with a philosophical attitude (Webster, 2003). Beyond the mundane trivialities of everyday life, critical life events call for serious pondering. Mere experience of crises is not enough; wisdom emerges from reflection on the challenges of life exigencies (Gluck, Bluck, Baron, & McAdams, 2005; Staudinger, 2001). Wise persons reflect on their lives in order to identify and assess their Salient autobiographical memories. They can then set goals to optimize their potential for growth (Pals, 2006; Webster, 2007).

(d) The wise person is not inflexible and rigid, but open to possibilities in responding to life's demands. Most large problems have multiple determinants, and can only be effectively addressed by the person who entertains alternate perspectives, can accept new information, and is willing to listen to untried potential solutions (Webster, 2003). Without surrendering identity or compromising principle, they need to allow winds of creativity to blow through the thoughts and dreams they entertain.

(e) Humor has been called "the ability at rare moments to play with and to reflect fearlessly on the strange customs and institutions by which man must find self-realization" (Erikson, 1963, p. 406). Humor in the service of wisdom can include acknowledgement of irony, stress reduction, and prosocial bonding. Kindly, sensitive humor can often bring people closer together, enrich their experience, soften hard edges, and open minds to a wider perspective (Freknall, 1994; Webster, 2003).

Wise persons are likely to have achieved ego integrity, a late life task in Erikson's (1963) schema, and to have taken responsibility for their chosen life direction (Webster, 2003). (For Erikson's psychosocial development theory, see Appendix D.) They are concerned about both others and themselves, and readily share their wisdom through support and advice with younger adults and the broader community (Webster, 2007). Wise persons demonstrate a variety of positive qualities, including maturity and ego integrity, interpersonal skills and judgment, and experience (Baltes, 1990; Erikson, 1963, 1964; Erikson, Erikson, & Kivnick, 1986; Kekes, 1983; Orwoll & Perlmutter, 1990; Pascual-Leone, 1990; Sternberg, 1990b; Vaillant, 1993; Ardelt, 2003).

"Wise persons use multidimensional, paradoxical reasoning, see meaning in good and bad life events, achieve ego integrity, show greater concern with caring, engage in

action implying generativity. They show openness to experience, acceptance, and psychological mindedness" (Kramer, 2003, p. 139). Ego maturity can attain wisdom in complex, integrated personalities. "A wise person (can) accommodate contradiction, (mediate) opposing universal psychic forces (Freud, 1964; Jung, 1969, 1971) and (reconcile) and (resolve) inner conflicts (Loevinger, 1976), or (achieve) a balance between knowing and doubting (Meacham, 1990)" (Shedlock & Cornelius, 2003, p. 154)

Wisdom may be understood as following two developmental trajectories: (a) postformal cognition, such as occurs at higher levels of the Model of Hierarchical Complexity, and (b) processes of finding a depth of truth at the core of experience. Both involve openness to experience, capacity to discover meaning in life's often adverse events, ego integrity, and generativity (Kramer, 2003).

Research Questions

This project aims to consider whether cognitive development from a moral perspective correlates with spiritual development. The research questions are: (a) Is there a relationship in adults between cognitive development as measured by the Model of Hierarchical Complexity and spiritual development as measured by the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002)? (b) Does level of wisdom development as measured by the Self-Assessed Wisdom Scale (Webster, 2003, 2007) mediate the relationship between cognitive and spiritual development? (c) Are demographic factors—age, gender, education level, socioeconomic status, religious affiliation or disaffiliation—significantly associated with level of cognitive, spiritual, or wisdom development?

Cognitive development may be considered the cornerstone of human development (Loevinger, 1976). Commons and colleagues, in composing and extensively analyzing their Model of Hierarchical Complexity, offer concorded charts of all previous theories, comparing the various developmental schemata (cf. Table 4; Commons & Bresette, 2006, pp. 260-261; Commons, Miller, Goodheart, & Danaher-Gilpin, 2005, pp. 35-36). This study hypothesizes that wisdom, understood to derive from both personality qualities and life experience, constitutes a moderator/mediating variable between cognitive and spiritual development.

Possible Significance for Research

This study will contribute, regarding the Model of Hierarchical Complexity, to the minimally studied domain of spiritual development, adding empirical data. Results of this study may enhance understanding of the relationship between cognitive and spiritual development. Proportions of the adult sample that operate predominantly from the various MHC post-formal stages are likely to emerge. These percentages will be correlated with the three SAI levels of spiritual development. Also available for incidental analysis and inference will be results regarding demographic data as these relate to levels of cognitive and spiritual development.

This research hopes to provide clinicians with a means of estimating clients' levels of cognitive, spiritual, and wisdom development, by administering the MHC, SAI, or SAWS. This study may offer evidence for understanding the direction and degree of influence of cognitive, spiritual, and wisdom development. Familiar with results of this research, clinicians might be better able to identify client deficits in cognitive, spiritual,

or wisdom domain(s). Treatment might then include interventions to help them progress developmentally.

This study intends to increase professional understanding of the relationship between cognitive and spiritual development. Day (2008), commenting on advantages for social science of the newly emerging Model of Hierarchical Complexity and associated methods for data analysis and interpretation, observes that these offer

> tools for conceptualizing how growth occurs and can be fostered, and evidence for abandoning prejudice, in moral and religious domains, in favor of the privileging of those things that facilitate increasing appreciation for paradox and contrast, in lieu of dichotomous thinking and conflict. (This might) have enormous consequences for the future of human development (p. 464).

Limitations of This Research

This study has several limitations. (1) A larger, more demographically representative sample than represented here would improve the validity and value of this research. Since the participants are college-educated, the Sample range of cognitive development excluded individuals with intellectual impairment or scoring at lower levels. (2) The sample was randomly selected only within limited parameters. The universities that sent out the Call for Participants were asked to randomly select present or past students from their database. However, although numerous universities, both representing national census regions and centered in the Midwest, were invited to send out the survey, those that agreed were essentially only the universities that counted the members of the dissertation committee among their alumni. (3) This study was cross-sectional. A longitudinal study would offer the benefit of retesting at one or more later times in order

to observe and measure developmental progress. (4) This study based participants' level of cognitive development on a single score. While this method is adequate for research, the Model of Hierarchical Complexity recommends for a truer assessment, giving individual clients several MHC measures.

(5) "(A) kind of dualism has emerged in the professional literature between what is characterized as a more emotional, relational, and relativistic experience of morality and the rational, autonomous, and normative reasoning of morality" (Armon & Dawson, 1997, p. 3). A narrative approach analyzes subjects' written incidents, uncovering individual, unique qualities of moral experience. This subjective approach, in some circles, takes precedence over conceptual moral reflection on Kohlberg's methodology (cf. Brown et al., 1992; Day & Tappan, 1996). This study addresses moral development only incidentally, as a measure of MHC cognitive development, and does not attempt to thoroughly address according to current preferences, features of participants' lived moral experience. Qualitative methods beyond the scope of this study, would seem necessary to do that.

(6) Limitation regarding spiritual development involves lack of comparability between the cognitive development and spiritual development instruments. The Model of Hierarchical Complexity is much more comprehensive and detailed than the Spiritual Assessment Inventory, despite the latter's grounding in object relations/psychodynamic theory. The MHC extends cognitive assessment to the farthest reaches of intellectual development. Spiritual development assessment has been recognized only in recent decades as an endeavor proper to the social sciences. The SAI can identify personality pathology tendencies, but tracks development only as far as adulthood with "realistic

acceptance." While theistic/Christian theology and pastoral counseling certainly have access to a rich tradition regarding levels of spiritual development (i.e., Benedictine, Carmelite, and Jesuit mystical traditions), social science assessment until recently has avoided faith-related constructs, moving instead toward human maturity, positive psychology, or altruism.

(7) It is possible that participants interested in spirituality/religion are the ones who self-selected for the study. Also, self-report might have yielded results tinged with socially desirable responding, overly positive or negative bias in self-appraisal, or simple lack of insight. (The MHC and SAWS do not measure socially desirable responding; the SAI's Impression Management subscale needs improved validity and was not used.) Eighth, limitations of time and resources precluded use of observer contributions regarding participants.

(8) Since the SAWS focuses on wisdom that increases with age and maturity, younger students will have less life experience to draw on. Simply because of their relative youth, their scores on the SAWS are likely to be less valid than those of older participants (alumni).

Chapter 2

Context of the Research Questions in Relevant Literature

This literature review will consider studies that have addressed the constructs of this study, responding to the research questions:

1. Is there a relationship between cognitive development as measured by the Model of Hierarchical Complexity and spiritual development in adults?
2. Does level of wisdom development mediate the impact of cognitive on spiritual development?
3. Are demographic factors—gender, age, level of education, socioeconomic status, religious affiliation/disaffiliation—significantly associated with level of cognitive, spiritual, or wisdom development?

Cognitive Development and Moral Reasoning

A noteworthy finding from research by Armon & Dawson (1997) was that generally, level of moral reasoning as defined by Kohlberg (1981) was moderately correlated with level of education over the lifespan. Working with Kohlberg's model (1981, 1985), Armon and Dawson (1997) conducted an exploratory longitudinal study to investigate whether moral reasoning advances into adulthood. Thirty-three participants,

mainly white, middle-class, were interviewed four times at approximate four-year intervals over 13 years (1977 to 1990). Participant numbers ranged from 50 to 33, and ages 5 to 72. Incomes averaged $30,000. Grouping into three segments (children/ adolescents, younger adults, and older adults) hypothesized that educational level and developmental trends would vary along age segments. Participants were individually administered the Good Life Interview (Armon, 1984) and Standard Form Moral Judgment Interview (Colby & Kohlberg, 1987) based on moral dilemmas (Armon, 1998). Taped and transcribed responses were scored according to the valid and reliable Standard Issue System (Colby & Kohlberg, 1987; Armon, 1997). Moral stage development was found to be sequential over the lifespan. Moral reasoning stage correlation with age was robust in children and moderate in adults. For the elderly, stage development decreased slightly curvilinearly. Moral reasoning stage for all age groups correlated moderately with educational attainment. Seven adults (21%) scored for post-conventional reasoning. "No subject attained moral Stage Four before the age of 24 nor moral Stage Five before the age of 35, supporting the notion that the higher moral stages are exclusively adulthood stages (Armon, 1984, 1987; Armon & Dawson, 1997)" (Armon, 1998, p. 6). These authors concluded that it seems to require more than thirty years to attain postconventional reasoning approaches, although more than chronological age is necessary. The study did not find systematic gender difference across age groups.

Results of this study (Armon & Dawson, 1997) support invariant sequencing of Piagetian-like moral reasoning stage development. Findings did not show stage skipping nor stage reversal more than rarely. Structural-developmental stage sequentiality across the lifespan was supported. A limitation of this study was that the moral dilemma

interviews did not consider the individual's lived morality in a contextual, behavioral way, from a sociopolitical perspective (Armon & Dawson, 1997). For some individuals, education may be a causal determinant of moral reasoning development; for others, variables related to life experience may be more influential. Increased education with more exposure to complexity of thought increased likelihood of higher moral reasoning. But, according to their research, more education was neither necessary nor adequate for stage change.

Armon and Dawson (1997) found that central to a moral event, so to moral development, is sociomoral conflict. The participant must perceive that a specific conflict has a moral dimension, and they need to consider it salient in order to pursue a solution that will impact progress in moral reasoning. From analysis of narrative content, they found that a range of factors help to determine recognition that a conflict involves morality. These may include "personality variables, the particular content and context of the event, and the timing of the event in one's life" (Armon & Dawson, 1997, p. 13).

The MHC and assessment of moral reasoning. In their development of the Model of Hierarchical Complexity, Commons asserts that he and colleagues have considered all major or recognized previous theories of adult development from which they have drawn, and constructed a single comprehensive model for adult development. They build on Piaget's theory of cognitive development (see Appendix B). The MHC website (www.dareassociation.org) posts empirical and conceptual/theoretical studies on the Model of Hierarchical Complexity.

Commons (2002) reflects that adult development as stages of hierarchical complexity can be studied according to varied epistemological perspectives. (a) *Analytic*

studies construct systems according to axioms, and do not demand independent observations. Philosophical, theoretical, logical works belong in this category. Studies of the Model of Hierarchical Complexity posted at the MHC website include 27 conceptual published articles (April 2010). (b) *Experiential* studies derive from one independent observation, of an experience that numerous subjects might corroborate. Art, music, novels, and films exemplify this form of verification substantiated by qualitative research. (c) *Empirical* methods consist in *quasi-experiments* which include structured and unstructured interviews, questionnaires, and tests. These may use naturally occurring or demographic variables such as gender, age, education, or previous test scores. Most of these studies are cross-sectional, with some feature of participants studied only once. (d) *Empirical* methods may be *true experiments* with independent variables. The MHC website posts 24 empirical articles on the Model of Hierarchical Complexity (April 2010). Most of these articles published in a variety of professional journals can be found at PsychInfo.

The authors investigated whether systematic-level reasoning can be qualitatively discriminated as different from and hierarchically associated with formal operations (Inhelder and Piaget, 1958). Undergraduate and graduate students (N = 110) completed a measure for systematic and metasystematic reasoning, using story problems designed to elicit thinking from concrete to formal to systematic to metasystematic levels. Findings affirmed that systematic and metasystematic modes of cognition exist as distinguished from and more complex than formal operations, and more frequent in graduate than undergraduate students.

Commons, Miller, and Kuhn (1982) explored "the relation between formal operational reasoning and academic course selection and performance among college freshmen and sophomores" (N = 64). In a first study, participants completed academic program selection tasks then were assigned to "concrete" and "formal" groups based on their cognitive performance. Participants at concrete and formal levels did not differ regarding either credits obtained or GPA. With a categorization of courses, however, "formals" took significantly more math and science courses and earned significantly better grades in them. In a second study, cognitive-operations analysis of students enrolled in math and science courses suggested "formal" self-selection; few were concrete reasoners.

The MHC is domain-general, content- and context-less. Level of cognitive development is determined not by content or context of the specific example, but by task performance. The MHC can therefore apply as measure of cognitive stage in a wide range of disciplines. Showing MHC extension beyond purely cognitive analysis, Commons, Galaz-Fontes, and Morse (2006) empirically studied "leadership, cross-cultural contact, socioeconomic status, and formal operational reasoning about moral dilemmas among Mexican non-literate adults and high school students." A variety of social, educational, and cultural variables may influence moral reasoning, according to Kohlberg. Two studies were conducted in a city bordering Mexico and the United States. Some non-literate adults were found to reason at the formal level and at moral stage three or four. These had been exposed to organization and cultural settings and were in leadership roles. Reasoning at higher levels was found also for high school students who

had cross-cultural and leadership experience as well as higher socioeconomic status. Generally, level of cognitive operations increased with age.

Commons, Goodheart, Pekker, Dawson, Draney, and Adams (2008) researched "using Rasch scaled stage scores to validate orders of hierarchical complexity of balance beam task sequences." The authors explored the association between the MHC hierarchical levels (a task property variable) and the Rasch scales that position both participants and items along a single hierarchically arranged dimension (a performance variable). The MHC was found to accurately predict Rasch stage scores of performed balance-beam tasks, "providing analytic and developmental basis for the Rasch scaled stages" (p. 182).

MHC-based empirical studies on politics and developmental stage include Commons, Miller, and LaLlave's (2000) "telling tales out of court: a pilot study of experts' disclosures about opposing experts." The authors explored perceptions of ethical appropriateness among expert witnesses in court: how experts assess varied types and circumstances of disclosure, their manner of proceeding, and their perspectives on professional standards. Forensic psychologists and psychiatrists ($N = 37$) completed a survey about content they would consider proper to reveal to their attorneys regarding a rival expert witness. The questionnaire included hypothetical disclosures differing in their pertinence to the presenting suit and in their measure of "public" as opposed to "personal" data. Participants significantly concurred that "public" content might be revealed. Answers about whether and how much personal information could be communicated differed widely.

Commons, Miller, and Gutheil (2004) examined “expert witness perceptions of bias in experts” and personal investment in case results. Attendees at an annual meeting of the American Academy of Psychiatry and the Law were asked to score a range of conjectured answers by experts. They were asked to consider a range of case outcomes and the potential for expert prejudice in various scenarios. Factor analysis resulted in two factors: (1) questions clearly biased, such as taking sides, and (2) questions evaluating the level of biasing potential for particular situations, or how probable would be other experts’ prejudice. Overall, experts thought only that circumstances where experts chose sides in a civil or criminal case would overtly bias their testimony. Otherwise, experts expected other experts to either show reasonable freedom from bias or to refuse ethically inappropriate cases.

The MHC and Kohlberg’s model. Supporting MHC postformal stages in the moral domain, the Model of Hierarchical Complexity uses stage criteria of the General Stage Model (GSM, Commons & Richards, 1984). Kohlberg’s postconventional Level Three highlights moral principles or ideals. The two Level Three Stages are Five and Six. Stage Five is *social contract:* "One should obey social rules because they benefit everyone and are established by mutual agreement. If the rules become destructive, however, or if one party doesn't live up to the agreement, the contract is no longer binding (Berger, 2005, p. 293)." Stage Six is *universal ethical principles*. "General universal principles, not individual situations or community practices, determine right and wrong. Ethical values (such as ‘life is Sacred') are established by individual reflection and may contradict the egocentric or legal values of earlier stages" (Berger, 2005, p. 293).

The MHC posits a moral Stage Six because Stage Five's claim to universality fails. Moral Stage Five can consist of a variety of metasystematic results (Sonnert & Commons, 1994). An attempt to consider equivalent all coordinations at the metasystenatic level would attempt to blend disparate, inconsistent elements. To Say, for example, that all religions are basically true, or even that two distinct religious systems are fundamentally equivalent is logically inconsistent. Some overarching values may be similar but the two sets of philosophical and faith premises are not equivalent. Sonnert and Commons' (1994) conceptual study found Kohlberg's moral Stage Six to be observable only interindividually or societally. Morality at this stage can no longer be discerned simply in single persons, but is understood in context of societal dialogue.

On moral developmental stage as assessed by the MHC, Commons, Lee, Gutheil, Rubin, Goldman, and Appelbaum (1995) developed empirical research on "moral state of reasoning and the misperceived 'duty' to report past crimes (misprision)." Mental health professionals from around the country (N = 149) at a law and psychiatry seminar were asked to read scenarios and answer questions about their duty to report client disclosures that they had committed serious crimes (misprision). Results found that substantial proportions of the group were not clear that by law they were bound to confidentiality. The study investigated from analysis of participants' written answers, their stages of moral reasoning (Kohlberg's and MHC). This article includes a conceptual description for each of the relevant moral/MHC stages (see Appendix H).

Armon's Classroom Mentor study (1998) took into account the influence of interpersonal relationship on moral thinking and motivation, to address social justice issues. This study involved 39 adults aged 20 to 57, middle- and upper-class

undergraduate students. Participants were asked to pursue caring relationships with students in a disadvantaged inner-city high school. Intent was to explore the impact of morally challenging, affective experience as well as level of moral development, on moral action and commitment regarding concerns such as racism, marginalization, prejudice, and injustice. The adult mentor participants also took part in a weekly university seminar with discussion, readings, experience sharing, and self-reflective journaling about the project. They completed "Classroom Mentor Program: Intern Response" surveys upon completion of the project and as follow-up two and a half years later.

At the immediate response period most of the mentors strongly agreed that their initial beliefs about the population had changed (66%), that the project had helped them better understand racial and cultural tensions (70%), and that the experience was personally meaningful (92%) (Armon, 1998). Relationships of mutual care and respect were key to mentors' changes in thinking and motivation to pursue social justice issues (Freire, 1992; Noddings, 1992).

In response to the follow-up interview nearly all respondents (78%) reported increased understanding, awareness, or empathy about issues affecting inner-city communities (Armon, 1998) or thought they would likely become involved in national or local education issues (95%). Since participants' beginning stage of moral reasoning was generally at the conventional level, the mentoring project affected attitude and behavior change through personal connection to persons in adverse circumstances. This study suggests that higher cognitive level with enhanced motivation may be teachable through emotionally engaging interpersonal experiences.

Research on promoting cognitive development. Responding to the question Why do this study? is the consideration that higher stages of adult cognitive development are desirable. As we have seen, progress in cognitive complexity entails assets valuable for empathic, tolerant human interaction, with acceptance of divergent perspectives and of the paradoxical in life, leading to a more peaceful environment. We have seen also in Chapter 1 that several studies, such as the Classroom Mentor Program above (Armon, 1998), have shown that it is possible to promote adult cognitive development. Needed are adequate time span for the participants, opportunities for meaningful self-reflective inquiry and interaction, and facilitators well versed in the hierarchical dynamics of cognitive progress. Few individuals are believed to reason at high stages of complexity. Sample-based guesses estimate between three and seven percent (Cook-Greuter, 2000; Torbert & Associates, 2004). Ross (2006) experimented using a "developmental action inquiry" with a six-session systematic process for discussing political concerns in some depth. The mean MHC stage of reasoning was hypothesized to increase. Participants were taught to think and discuss in disciplined ways, to see that complex issues derive from multiple underlying causes, implicating also the participants' own behavior. The researcher found that as people more frequently use *if . . . then* reasoning with more complex causal connections, their attention span lengthens—an essential capacity pragmatically necessary for resolution of difficult issues. The researcher found that, along with cognitive progress, group culture shifted from downbeat and unconstructive to encouraging, reflective, and harmonious, affected by participants' motivation to succeed. There was a sense of responsibility for having contributed to the problem to some degree, and hope for improving the situation. The developmental action inquiry used reflective

awareness as a real-time learning process for participants engaged in ongoing effort. "Among the domains of actions/behaviors, plans/strategies, intentions/purposes, and outcomes/assessments" (Torbert, 2004) the individual or group developed conscious ability to reexamine "assumptions, intentions, strategies, and actions in circumstances in which they arise" (Ross, 2006, p. 42).

Additional studies using qualitative methods also succeeded in eliciting cognitive stage advance among adults. Paxton (2003) used developmental action inquiry regarding White consciousness attitudes among EuroAmericans, and found transformative change during the study and 18 months after. Van Stralen-Cooper (2003) investigated with the developmental action inquiry a five-month workplace learning program. Results showed progress in participants' epistemological capacities. Lamm (2000) and Wicker (2001) found with six- and nine-month-duration programs for leadership development that participants acquired perceptual, self-reflective, and behavioral capacities associated with cognitive development. A decision-making course for college students promoted awareness development reflecting Torbert's (2004) four emphases: behaviors, strategies, intentions, and outcomes (Torosyan, 1999). The developmental action inquiry method resulted in 53% of participants whose Measure of Intellectual Development scores increased, while only 35-40% increased with alternate intervention-inclusive courses. Reasoning ability at more complex stages can have social, educational, cultural, political, and other applications (Ross, 2006).

Limitations in extant literature to be addressed by this study. This study will analyze sample demographics as factors in the cognitive-spiritual development correlation project. Regarding moral development, Gilligan's critique of Kohlberg's

model that women are handicapped in their orientation to care rather than justice, has not been substantiated by subsequent research (Berger, 2005). Gender differences have been found to be less impactful than cultural influences on moral reasoning (Walker, 1988). It will be interesting to see whether this study supports this finding.

Regarding cultural influences, Armon & Dawson (1997) acknowledged that their research with moral dilemma interviews did not consider the individuals' lived morality in a contextual, behavioral way, from a sociopolitical perspective**.** They advise focusing more on cultural and social factors that impact moral development in adults. "While power and privilege may provide conditions for conventional moral reasoning, we believe there is little demand and few rewards for postconventional reasoning in the citizens of modern, capitalistic societies" (p. 12). Postconventional reasoning would be at MHC levels 12 (metasystematic) and beyond. This investigation hopes to find whether cognitive and spiritual development correlate with statistical significance.

Spiritual Development

The Spiritual Assessment Inventory. The SAI (Hall & Edwards, 1996, 2002) measures two main aspects of spiritual development: (a) contemplative awareness of the presence of God, and (b) quality of relationship with God. The SAI was developed to expand beyond intrinsic-extrinsic orientation, the theory at the time supporting measures of spiritual development, to a relational paradigm. The SAI was based in objected relations/attachment theory, suggesting that "one's relational/emotional development is mirrored in one's relationship with the Divine (Brokaw & Edwards, 1994)" (Sarazin, 2011). This characterization might apply less well to later stages of spiritual development. The SAI was intended to be psychometrically sound, a multidimensional

self-report measure practical for use in psychotherapy. Hall and Edwards' first article (1996) on the initial development and factor analysis of the SAI reported reliability indicators, factor analysis, and convergent validity. In a second article (2002), they explained having revised some of the subscales. They demonstrated the SAI's incremental validity beyond intrinsic-extrinsic orientation and spiritual well-being, and gave evidence of convergent and discriminant validity.

In a third article, Hall, Reise, and Haviland (2007) used item response theory to assess the SAI's psychometric properties. They found that for several subscales "two or three items carried the psychometric workload" (p. 157) and that measurement for all five subscales was precise for one end of the subscale rather than the other. They observed that "sample homogeneity and the quasi-continuous nature of the SAI constructs may have affected (their) results" (p. 157). By "quasi-continuous" they meant that participants may be unable to differentiate reliably between moderately and very true, for example, on their awareness of the presence of God. People are likely to be either aware or not. The authors also recommended that "explorations of how SAI items work in samples not drawn from religious institutions should be undertaken" (p. 175).

Research using the SAI. Conservative estimates suggest that the SAI has been used in over 100 empirical studies. The SAI has been used in dozens of published studies and numerous dissertations, including research in the fields of psychology, theology, health, education, anthropology, and business (Sarazin, 2011, p. 14). Studies with the SAI have either administered the entire instrument or adapted it to research needs by using a scale subset. "It has generally correlated with other constructs according to theoretical expectations" (Sarazin, 2011, p. 15). SAI studies can be grouped as addressing

development understood relationally, psychological disorders, psychological regulation, longitudinal studies (Sarazin, 2011), and other subjects.

SAI and development as relational. Hall, Brokaw, Edwards, & Pike (1998) found object relations development at higher levels to correlate with spiritual maturity. Growing maturity in relating to God corresponded to increasing maturity in relating to others. The SAI (Hall & Edwards, 1996) and Religious Status Inventory (Massey, 1988; Hadlock, 1988) assessed level of spiritual maturity, and the Bell Object Relations Inventory (Bell, Billington & Becker, 1986) degree of object relations development. Results found that in nearly all analyses, measures of spiritual maturity correlated significantly with object relations development.

Transformation moderating quest and spiritual development. Sandage, Jankowski, and Link (2010) explored the connection between spiritual dwelling and spiritual seeking. With Christian graduate seminary students (N = 181), they measured spiritual dwelling with the SAI's Realistic Acceptance (RA) subscale (Hall & Edwards, 1996, 2002) and spiritual seeking with the Quest Scale (Batson & Schoenrade, 1991). Participants responded also to the Religious Orientation Scale-Revised (Allport & Ross, 1967), the Spiritual Transformation Questionnaire (Miller & C'de Baca, 1994, 2001), and the Psychiatric Symptoms Checklist (Bartone, Ursano, Wright & Ingraham, 1989). Analysis used correlation, with spiritual transformation a moderator. Results found small positive correlations between the SAI's Instability and Disappointment subscales, Quest, and Mental Health Symptoms (MHS). As expected, there were small negative correlations between Realistic Acceptance and MHS.

Disappointment mediating quest and forgiveness. Sandage and Williamson (2010) explored the association between forgiveness and relationally understood spiritual dwelling and seeking. Christian graduate students (N = 203) answered the SAI (Hall & Edwards, 1996, 2002), the Gratitude Questionnaire (McCullough, Emmons, & Tsang, 2002), the Disposition to Forgive Scale (McCullough et al., 2002), a Prayer Scale (Poloma & Pendelton, 1989), and the Quest Scale (Batson & Schoenrade, 1991). Analysis used correlation and structural equation modeling. Findings showed that gratitude mediated the relationship between securely attached prayer forms and dispositional forgiveness. Mediating a negative relationship between dispositional forgiveness and quest or spiritual seeking was disappointment with God. The model also fit the data in reverse: the relationship between forgiveness and prayer was also mediated by gratitude, and the negative relationship between forgiveness and quest was mediated by disappointment with God.

Differentiation of self mediating forgiveness and mental/spiritual health. Sandage and Jankowski (2010) investigated whether the relationship between mental and spiritual health and dispositional forgiveness would be mediated by differentiation of self (Kerr & Bowen, 1988). Graduate Christian-university students (N = 213) completed the SAI (Hall & Edwards, 1996, 2002), the Differentiation of Self Inventory-Revised (Skowron & Schmitt, 2003), the Disposition to Forgive Scale (McCullough, Emmons & Tsang, 2002), the Positive Affect subscale of the Positive and Negative Affect Schedule (Watson, Clark & Tellegen, 1988), and the Psychiatric Symptoms Checklist (Bartone, Ursano, Wright & Ingraham, 1989). Using correlation and multiple regression, findings showed that the associations between dispositional forgiveness and psychological well-

being, and between instability in relationship with God and mental health symptoms were mediated by differentiation of self.

Forgiveness mediating disappointment and well-being. Strelan & Patrick (2009) hypothesized that spiritual maturity, dispositional forgiveness, and relationship commitment mediated the association between well-being and disappointment regarding relationship with God. Australian church attendees (N = 160) responded to the SAI (Hall & Edwards, 1996, 2002), part (five items) of a relationship commitment scale (adapted from Exline et al., 1999); the Spiritual Well-Being Scale (Ellison, 1983); two subscales from the Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995); and the Heartland Forgiveness Scale (Thompson et al., 2005). Analysis used correlation and multiple regression. Disappointment with God was found to correlate significantly with depression and stress. Spiritual maturity, spiritual well-being, relationship commitment, and dispositional forgiveness were inversely correlated with disappointment with God.

Object relations development in Christians (Hall, Brokaw, Edwards, & Pike, 1998). Smith and Canfield (2004) hypothesized that relationship with others and with God would be highly correlated. Health fair attendees at a private university completed the SAI (Hall & Edwards, 1996, 2002), the Religious Status Inventory (Hadlock, 1988; Massey, 1988), the Bell Object Relations and Reality Testing Inventory and Object Relations Form (Bell, Billington, & Becker, 1986), and the Marlowe-Crowne Social Desirability Scale (1960). Correlation and confirmatory factor analysis supported the researchers' hypothesis. Multiple regression found relationship with both God and others to significantly impact psychological well-being.

SAI and psychological disorders. Studies using the SAI considered psychological problems.

Perfectionism. Theland, Anderson, and Edwards (2003) investigated the association between two kinds of perfectionism: beneficial and maladaptive. Undergraduate students in a Christian university and other organizations (N = 500) completed the Frost Multidimensional Perfectionism Scale-F & M (MPS, Frost, Marten, Lahart & Rosenblate, 1990) and assessments of spiritual functioning: the SAI (Hall & Edwards, 1996, 2002), Quest Scales A & B (Batson & Schoenrade, 1991), Faith Maturity Scale Horizontal subscale (Benson, Donahue & Erickson, 1993), and the Religious Fundamentalism Scale (Altemeyer & Hunsberger, 1992). Correlation found a small positive association between maladaptive perfectionism and the SAI's Instability and Disappointment with God. Maladaptive perfectionism associated negatively with the SAI's Realistic Acceptance and Awareness of God.

Narcissism in theology students. Plass and Conver (2002) examined the frequency of narcissism among students of theology. Participants (N = 44) completed the SAI (Hall & Edwards, 1996, 2002), emphasizing Grandiosity, and the MCMI-III (Millon, Davis, & Grossman, 2006). Analysis of variance found grandiosity and narcissism significantly represented in the Sample's personality profiles.

Delinquency and running away among Korean-American youth. Kim and Edwards (2000) examined Korean-American adolescents' delinquent and runaway conduct using the SAI (Hall & Edwards, 1996, 2002), the Existential Anxiety Scale (Good & Good, 1974), the Structural Family Interaction Scale (Perosa, Hansen & Perosa, 1981), and an Adolescent Runaway/Delinquent Probability Scale. Discriminant analysis

found Korean-Americans 14 to 18 years of age whose conduct was delinquent or who ran away to differ significantly from average Korean-American youth in their spiritual maturity (SAI Awareness of God and Realistic Acceptance), and in existential anxiety. Also significantly different were their family interaction (negativity, verbal conflict, and violent detachment) and personality characteristics (sense of rejection, hostility, hopeless isolation, and thinking of running away).

Caregiving for Alzheimer's patients. Dyer and Duvall (2001) considered social and spiritual support as possibly easing caregiving for Alzheimer's patients. Participants described availability of social and spiritual support, and completed the SAI (Hall & Edwards, 1996, 2002), the Spiritual Perspective Scale (Reed, 1987), the Philadelphia Geriatric Center Caregiving Appraisal Scale (Lawton, Kleban, Moss, Rovine & Glicksman, 1989), and the Caregiver's Hassles Scale (Kinney & Stephens, 1989). Caregivers who experienced caregiving as more burdensome scored significantly higher on SAI's Instability and Realistic Acceptance subscales. More hassles correlated significantly with increase in Instability and Disappointment with God. Higher Awareness of God correlated significantly with more spiritual support Satisfaction and with more caregiving hassles.

SAI and psychological regulation. SAI research investigated psychological adjustment.

Life Satisfaction and coping. Horton and Boswell (1999) examined the correlation between religiosity (extrinsic and intrinsic) and spiritual maturity, and Satisfaction with life and coping resources. Undergraduate and graduate students (N = 197) completed the SAI (Hall & Edwards, 1996, 2002), the Religious Orientation (extrinsic/intrinsic

religiosity) Survey (Allport & Ross, 1967), the Satisfaction with Life Scale (Diener, Emmons, Larson, & Griffin, 1985), and the Coping Resources Inventory (Hammer & Marting, 1993). Using correlation and multiple regression, the SAI's spiritual maturity, the religiosity variables, and extrinsic/intrinsic orientation were found to provide 24% of the variance in Satisfaction with life and 23% of the variance in coping resources level. Extrinsic religiosity was significantly negatively correlated with spiritual maturity and with coping resources and with life Satisfaction. Intrinsic religiosity significantly positively associated with spiritual maturity and with coping resources and Satisfaction with life.

Psychological regulation according to the Rorschach. Seatter and Edwards (2001) investigated spirituality as it associates with psychological aspects of personality (Piedmont, 1999; Benner, 1988, 1998) using a model (Emmons, 1999) incorporating one's activities and goals. Participants (N = 50) completed the SAI (Hall & Edwards, 1996, 2002) and the Rorschach Inkblot Test (1927: Exner, 1993). Analysis used correlation of SAI subscales with Rorschach responses and indices. Results found that the Rorschach index on conventional reality interpretation correlated positively with the SAI's Realistic Acceptance and Awareness of God.

Missionaries' adjustment and coping with burnout. Hall, Edwards, and Hall (2006) asked whether spiritual development correlated positively with sociocultural adjustment and psychological development. Missionaries (N = 181) in 46 countries completed the SAI (Hall & Edwards, 1996, 2002), the Ego Function Assessment Questionnaire-Revised (Brokaw & Edwards, 1994), and the Brief Symptom Inventory (Derogatis, 1983). Correlation and multiple regression found spiritual and psychological

development to interact significantly in predicting cross-cultural adjustment. Results found the relationship between spiritual and psychological development to be complex. "(P)eople with low levels of psychological development, as defined by ego functioning (were found to be) more vulnerable to effects of spiritual difficulties" (p. 207).

Bergaas and Duvall (2003) asked whether missionaries with higher spiritual maturity would be more adept in coping and undergo less burnout. Missionaries from five Norwegian organizations (N = 14) serving in 30 countries completed the SAI (Hall & Edwards, 1996, 2002), the Spiritual Life Scale, the Religious Problem Solving Scale (Pargament, Kennell & Hathaway, 1988), the Ways of Coping Questionnaire (Parker & Endler, 1993), and the Maslach Burnout Inventory (1986). An investigator questionnaire measured stress levels. For the relationship between burnout and spirituality, stress level was controlled with partial correlation. The study found that among missionaries increased spiritual maturity significantly associated with less burnout. Higher spiritual maturity correlated with coping such as positive reframing and problem solving. Multiple regression found burnout to be most strongly predicted by stress, with significant effects also for lack of spiritual support and lower spiritual maturity.

Longitudinal studies with the SAI. Several SAI studies have been longitudinal.

Seminarian profile patterns. Atkinson and Hall (2006) used the SAI (Hall & Edwards, 1996, 2002) in research examining undergraduate and seminarian profile patterns. A first study found with SAI subscales significant between-group differences for gender and education, but not for age with education controlled. A second study used cluster analysis to distinguish SAI profile patterns for seminarians (N = 15). Identification

of three profile patterns was followed by a search for common themes in interviews with profile representatives.

Seminarian spiritual development. Williamson and Sandage (2009) assessed progress in spiritual development among graduate seminary students (N = 119) over three years. Participants completed the SAI's Realistic Acceptance subscale (Hall & Edwards, 1996, 2002), the Spiritual Well-Being Scale (Ellison, 1983), the Intrinsic/Extrinsic Religiosity Scale (Gorsuch, 1989), the Quest Scale (Batson & Ventis, 1982), the Religious Maturity Scale (Leak & Fish, 1999), and the Faith Maturity Scale (Benson, Donahue & Erickson, 1993). The study conjectured that seminary-year-grouped students would show increase over time regarding intrinsic religiosity, spiritual openness, questing, spiritual activism, and perhaps regarding realistic acceptance and spiritual well-being. Analysis used hierarchical linear modeling with a random effects covariance model. The study found that higher intrinsic religiosity correlated significantly with increase in realistic acceptance, spiritual activity, and spiritual well-being. Higher questing correlated with higher spiritual openness. Change in questing did not correlate with change in realistic acceptance or spiritual activity. Higher intrinsic religiosity associated longitudinally to increase in realistic acceptance, but not to spiritual openness. This study found that with seminary training, students increased in intrinsic religiosity, spiritual openness, questing, and spiritual well-being. They generally grew in realistic acceptance in relationship to God and became more active in religion. With increase in questing, they grew in spiritual openness, but decreased in spiritual well-being.

. ***Additional SAI studies.*** Additional studies using the SAI have pursued a range of subjects.

Attachment. Warren (1998) investigated the relationship between spiritual maturity and attachment with Christian church attendees and undergraduates. They completed the SAI (Hall & Edwards, 1996, 2002), the Spiritual Well-Being Scale (Ellison, 1983), a four-level attachment measure, and the Parental Bonding Instrument (Parker, Tupling & Brown, 1979). The attachment scales correlated positively with the SAI; they showed little or no relationship with the Spiritual Well-Being Scale. The study found positive relationships between secure attachment and Awareness of God, and between insecure attachment and Disappointment and Instability in relationship with God.

Parenting styles. Bryant and Harris (2003) examined parenting styles in family of origin and later spiritual maturity. Nondenominational church attendees (N = 160) completed the SAI (Hall & Edwards, 1996, 2002), a demographic form, and the Parental Authority Questionnaire (Buri, 1991). Canonical correlation found in women positive correlation between having been raised by authoritative parents and spiritual maturity later in life. Results were unclear for men.

Comparison of Jewish, Muslim, and Protestant groups on the association between object relations development and experience of God and self. Tisdale (1998) investigated whether level of object relations development and experience of God and self, found to correlate significantly among Christians, would apply similarly to Jews and Muslims. The study asked also whether these faith groups differ in experience of God. Protestant, Jewish, and Muslim undergraduates (N = 150) completed the SAI (Hall & Edwards, 1996, 2002), the Bell Object Relations Inventory (Bell, Billington & Becker, 1986), the Religious Experience Questionnaire (Edwards, 1976), the Gorsuch Adjective Checklist

(1968), the Loving and Controlling God Scale (Benson & Spilka, 1973), the revised Intrinsic/Extrinsic Religiosity Scale (Gorsuch, 1989), the Religious Problem Solving Scale (Pargament, Kennell & Hathaway, 1988), and the Tennessee Self-Concept Scale (Marsh & Richards, 1988). Between-group analyses used correlations, *t*-tests, and analyses of variance. Among the three faith groups level of object relations development associated significantly with experience of God and self. The three groups did not differ regarding object relations development or perceived self-adequacy. For the three faith groups, higher object relations development correlated significantly with: the SAI's Awareness and Realistic Acceptance of God subscales; intrinsic religiosity experience of God as close, benevolent, and loving; higher perceived self-adequacy; and deferring and collaborative religious coping. Regarding experience of God the three faith groups differed significantly. For Protestants, experience of God correlated similarly with levels of object relations. For cultural Jews, experience of God correlated with interpersonal and social health; for observant Jews, no clear pattern was discernible. For Muslims, experience of God associated with variables pertaining to relationship with others.

*The five-factor personality model***.** Donofrio and Perosa (2005) investigated the relationship between spirituality and personality using the NEO Personality Inventory-Revised (Costa & McCrae, 1992) facets. Seminary and public university graduate students completed the SAI (Hall & Edwards, 1996, 2002), the NEO PI-R, a second relationally based Judeo-Christian spirituality scale, and a Satisfaction with life scale. The study found significant association between spirituality scales and the NEO PI-R domains of Neuroticism, Extraversion, Openness, and Agreeableness. Results showed significant correlation between spirituality scores and numerous NEO PI-R facets.

Multiple regression found that spirituality added separate variance beyond NEO PI-R domain scores to predict life Satisfaction.

Cognitive deficits. Thomas and Mastin (2008) examined the association between spiritual development and effects of specific learning disabilities. Current and former students of a public school completed the SAI (Hall & Edwards, 1996, 2002) and the Woodcock-Johnson III Tests of Cognitive Abilities (Woodcock, McGrew & Mather, 2001) or the Woodcock-Johnson Psychoeducational Battery-R (Woodcock & Mather, 1989). A marginal correlation was found between Long-Term Retrieval and Awareness of God.

Social interest. Hodges and Stone (2006) investigated the relationship between spiritual maturity and social interest. Bible college (N = 85) and university students (N = 65) completed the SAI (Hall & Edwards, 1996, 2002), the Sulliman Scale of Social Interest (1973) (SSSI), and forms regarding demographics and religious behavior. With correlation and multiple regression spiritual maturity was significantly related to social interest. SSSI scores correlated with the SAI and religious behavior. Social interest correlated moderately with the SAI's Awareness of God and Realistic Acceptance subscales. Instability and Disappointment with God correlated negatively with social interest. Neither Grandiosity, demographic variables, nor religious behavior associated with social interest. Other studies using the SAI (Hall & Edwards, 1996, 2002) include research on spiritual well-being (Hall & Edwards, 2002; Nordick, 2000); the association between spiritual development and empathy (Lim, 2009); forgiveness (Liao & Hill, 2007; Shin, 2005); awareness of God and Christians' knowledge of the Holy Spirit (Fee & Ingram, 2004); psychopathology as measured by the MMPI-2 (Nordick, 2000);

association between spiritual defensiveness and psychological defensiveness (Burchfield, 2005); measuring non-religious spiritual coping among ill persons (Lewin, 2001); romance and mate selection (Nussbaum, 2007); and wilderness experiences (Zequiera-Russell & Abernethy, 2003) (Sarazin, 2011, pp. 14-15).

Spiritual well-being. The SAI understands that quality of relationship with God can contribute to human well-being (Hall, 2004). Ciarrocchi and Deneke (2005) using measures of positive and negative affect and of cognitive well-being, conjectured that spirituality and religious support and practice would predict well-being. Results found that "(s)pirituality defined as perceived closeness to God, adds an element to well-being not accounted for by age, gender, personality, or the social support provided in the religious setting" (p. 225).

Measures similar to the SAI. This section will discuss empirical studies related to the SAI constructs. Presented first will be awareness of the Sacred: measures of daily spiritual experience and of spiritual well-being and, second, measures of constructs related to spiritual development. Third will be focus on the SAI's second principal dimension: quality of relationship with God. Here, attachment as it pertains to spiritual development will be addressed. Since Hall's (2004) theory of implicit relational representations incorporates neuroscience, neuroscientific studies related to spiritual development will be included. Fourth will be longitudinal research that combines constructs addressed in this paper. Fifth will be reference to current advances in understanding and assessing spirituality.

Comparable to the SAI in measuring awareness of the Sacred are the Daily Spiritual Experiences Scale (DSES) and Spiritual Well-Being Questionnaire (SWBQ).

Measures of constructs related to spiritual development are the Spiritual Transcendence Index (STI), Spiritual Experience Index (SEI), and the Religious Maturity (RM-2) scale. Measuring mystical (cross-cultural Sacred) experience as associated with religious motivation and personality is the Mysticism (M) scale. The SAI is compared with these instruments to show its appropriateness for this study.

Awareness of the Sacred. ***The Daily Spiritual Experiences Scale.*** The Daily Spiritual Experiences Scale (DSES, Underwood & Teresi, 2002; Underwood, 2006) measures "awe, gratitude, mercy, sense of connection with the transcendent, compassionate love, awareness of discernment/inspiration, and a sense of deep inner peace" (Underwood, 2011, p. 31). The process of DSES development included consideration of social science, comparative religion, and theology sources, examination of extant instruments, and numerous interviews with a wide range of individuals. Like the SAI (Hall & Edwards, 1996, 2002), the DSES measures "experiences of relationship with and awareness of the divine or transcendent" (Underwood, 2006, p. 182).

Spiritual experience and well-being. Ellison and Fan (2007) based their research using the DSES on data from the General Social Surveys (1998, 2004), investigating how spiritual experiences relate to various aspects of psychological well-being and social configuration (Underwood, 2006). The DSES was found to moderately predict positive outcomes of well-being, such as, optimism, self-esteem, excitement with life, and happiness. While the DSES measures awareness of the Sacred and spiritual well-being, it does not assess developmental level, as is required for this study.

The Spiritual Well-Being Questionnaire. Fisher (1998) developed a Spiritual Well-Being Questionnaire (SWBQ) to reflect relationship harmony with oneself, others,

nature, and God (2003). Studies supported SWBQ validity and its psychometric properties (Gomez & Fisher 2003, 2005). The SWBQ was not appropriate for the current study because it does not emphasize development as does the SAI (Hall & Edwards, 1996, 2002). Also, the latter was constructed through research involving a much wider age range and more diverse populations.

Measures of constructs related to spiritual development. A number of instruments measure constructs similar to those of the SAI.

The Spiritual Transcendence Index. Similar to the SAI's dimensions of awareness of the presence of God and quality of relationship with God is the Spiritual Transcendence Index. Seidlitz, Abernethy, Duberstein, Evinger, Chang, and Lewis (2002), intend with this scale to measure "perceived experience of the Sacred that affects one's self-perception, feelings, goals, and ability to transcend one's difficulties" (p. 439). Exploratory research with the STI showed favorable consistency and validity. The STI understands spirituality in a broad sense, and is not theistically oriented. Since the STI does not assess development, it is not useful for the current study.

The Spiritual Experience Index. Genia (1991) constructed a Spiritual Experience Index to measure spiritual maturity in individuals diverse in spiritual and religious beliefs. SEI theory, restricted to Protestant Christianity, derives from Allport's (1950) concept of religious maturity, extrinsic-intrinsic motivation (Gorsuch, 1988), and a Quest (Batson, 1982) open-minded-seeking approach. The SEI assumes a normative developmental progression from a child's egocentric religiosity to a midlife adult's self-transcending faith. Genia characterizes the highest stage of spiritual development according to ten criteria. Showing good psychometric properties, SEI results correlated

strongly with personality and high self-esteem. The SEI offers useful insights about developing spirituality. To be appropriate for the current study the SEI would need a clearer differentiation among faith, religion, and spirituality, and theoretical broadening beyond Protestantism.

A measure of religious maturity. Built on Allport's (1950) theory about religious maturity is Leak and Fish's (1999) Religious Maturity (RM) scale, Second Edition. Allport characterizes mature religion as "a commitment that directs one's life, complexity of thought with respect to religious-existential issues, tolerance, and a readiness to doubt" (Leak & Fish, 1999, p. 84). Participants began the RM-2 scale with completing 21 scales in a 75-minute session. This was followed by a second session to finish the scale. They were then asked to have a friend rate them on religious maturity. This study was comprehensive!

Results supported validity of the RM-2. High scorers were found to tend toward both religious commitment and flexibility, with readiness to doubt. Leak and Fish consider the RM-2 meritorious for its association with indexes of personal maturity and for the scale's peer-rating measure. A number of elements of the RM-2 scale parallel dimensions of cognitive development. In addressing religious maturity, the RM-2 approximates but is not identical to the SAI conceptualization of spiritual development. Since the RM-2 scale purports to derive from Allport's notion of religious maturity, it would seem to need to include also a subscale on religious relativism (Kelly, 1970). As was the case with the SEI (Genia, 1991), the RM-2 is problematic for members of religions that do not value relativism over dogma.

A measure of mystical experience. Mysticism is included because it corresponds

to contemplative awareness of divine presence, the SAI subscale that addresses a component of spiritual development that subjects acknowledge across developmental stages. Hood's Mysticism (M) scale (1975), based on Stace's (1960) categories of mysticism, found two main factors: mystical experience and religious motivation. M scale high scorers are found to have more intrinsic religious motivation, to be more open to experience, to have more intense religious experiences, and on the Minnesota Multiphasic Personality Inventory (MMPI) to have moderately high scores on the L (Lie), 1 (Hypochondriasis), and 3 (Hysteria) scales (Hood, 1975).

Theoretical assumptions (Stace, 1960) are that: (a) mystical experience is phenomenologically universal, with disparate ideological interpretations; and (b) core categories of mysticism need not all be accounted for in every particular instance, some of which may simply *resemble* mystical experience. Raters can be trained to "classify human experiences according to their degree of mystical quality" (Clark & Raskin, 1967; Hood, 1973; Pahnke, 1963; Pahnke & Richards, 1966; Hood, 1975, p. 30). The Mysticism Scale (Research Form D) includes: (a) loss of sense of self, (b) multiplicity of objects perceived as united, (c) perception of interiority in everything, including material objects, (d) experience as source of knowledge, (e) ineffability, (f) positive affect, and (g) sense of the Sacred.

The M scale was developed according to a conceptualization of mysticism presumed to be "cross-cultural, ahistorical, and unbiased by religious ideology" (Stace, 1960, pp. 38-40; Hood, 1975, p. 39). An individual scoring high on the M scale is open to experience, perceives the world atypically, and if religious, considers mystically oriented

experiences sacred and positive. The M scale is in need of additional research to more clearly differentiate the factors of general mysticism from religious interpretation.

Quality of relationship with God. Research using instruments similar to the SAI have examined quality of relationship with God.

God as attachment figure. In what Hall (2007) calls "relational metapsychology," he traces the current convergence of object relations and attachment theories (cf. Blatt & Levy, 2003; Fonagy, 2001; Goodman, 2002; Scharff & Scharff, 1998) and recent discoveries in the neurobiology of emotion and affective information processing (Hall, 2004). Hall postulates several organizing principles supported by empirical research, for a theory of implicit relational representations. These principles hypothesize that people develop through emotionally important relationships. We internalize close relationships through codes of emotional information processing. Implicit relational representations parallel early relational experiences encoded prior to language acquisition and share their emotional tone. We act spontaneously in subsequent patterns of relating, out of a preconscious sense of how important relationships work and their emotional meaning. Our implicit relational representations, because they are automatic and prior to verbal processing, shape our sense of self and others, often outside of awareness. Five principles organize Hall's (2004) theory of implicit relational representations: (a) development driven by significant relationships; (b) neurobiology of affect attunement; (c) repeating encoded relational experiences; (d) early shaping of later attachment patterns; and (e) implicit representations of self and others.

In summary, numerous conceptual and empirical studies support use of the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002) to measure level of object-

relations-based psychological/spiritual maturity. Multiple lines of research, including theories of attachment, object relations, neurobiology of emotional development, and emotional information processing, support a model of implicit relational representations. "Implicit, subsymbolic processing is viewed as the foundational channel for 'spiritual' experiences, which are then connected to explicit, symbolic processing through referential activity" (Hall, 2004, p. 79). From this theoretical framework is derived a "model of psychospiritual maturity and mental health in which the association between religious/spiritual involvement and realized Christian spirituality is moderated by an individual's level of relational maturity" (p. 79).

SAI theory and attachment. The aspect of SAI theory (Hall, 2004) that is founded on mental models of attachment is supported by a longitudinal study by Kirkpatrick (1998). Over two years 1,126 college students (mean age 18.5) were given a measure of adult attachment style with self-classification: negative versus positive view of self, crossed with negative versus positive view of others (Bartholomew & Horowitz, 1991). They also took religious measures: (1) images-of-God scales derived from Benson and Spilka (1973); (2) a single question about whether they had a personal relationship with God (Kirkpatrick & Shaver, 1992); and (3) a single-item description-of-God measure (Kirkpatrick & Shaver, 1992) where they chose among a personal, interested God; an impersonal force; or no belief in God. The longitudinal study supported prior research finding more positive mental models of God and self among the securely attached. The study found that the anxious/ambivalently attached (with negative view of self and positive view of others) were most likely to report religious experience or conversion. Beliefs about God may offer a view about individuals' attachment needs and

cognitions.

> Psychologically, God is perceived by many as one with whom one has a personal attachment relationship, and internal working models of attachment are predictive of religious belief and behavior both cross-sectionally and across time. At a given point in time, mental models of God are correspondent with mental models of self (and to some extent of others); over time, these mental models are predictive of religious change reflecting the adoption of God as a substitute attachment figure (Kirkpatrick, 1998, pp. 971-972).

Other investigators found that individuals who reported secure attachment in current relationships perceived God as less distant and more loving (Brokaw & Edwards, 1994; Hall, Brokaw, Edwards, & Pike, 1998). Secure current attachments also associated to relationship with God as emotionally warmer and more constant (Hall & Edwards, 2002) (Hall, Fuziwara, Halcrow, Hill, & Delaney, 2009).

> The quality of one's present object relationships (theoretically presumed to stem from early interpersonal relationships and concomitant introjects) is re-created in relationship with God and/or one's relationship with God influences the matrix of internalized relationships. For example, persons who tend to experience others as critical and to emotionally withdraw to protect themselves are more likely to experience God as critical and to emotionally withdraw from God when this experience occurs. Likewise, when positive and negative relationship experiences occur with God, these may influence one's internal object relations and relationships with other people (Hall, Brokaw, Edwards, & Pike, 1998, p. 310).

Neuroscience on spiritual experience. In support of the Spiritual Assessment Inventory, Hall (2004) uses neuroscience to substantiate the theory of implicit relational representations.

> In the neurobiology of object representations "the child's first relationship serves as a template for the imprinting of circuits in the emotion-processing right brain, thereby permanently shaping the individual's adaptive or maladaptive capacities to enter into later emotional relationships" (Schore, 1997, p. 30; Hall, 2004, p. 72).

Relatively successful patterns of interpersonal interaction establish a consistent basis for interactive emotional control that is unconsciously internalized as implicit.

> Implicit relational representations are repetitions of relational experiences, sharing a common affective core, that are conceptually encoded in the mind as non-propositional meaning structures. They are the memory basis for implicit relational knowledge, our 'gut-level' sense of how significant relationships work (Hall, 2004, p. 71).

Attachment style has been found to predict various aspects of psychosocial growth, including affect regulation (e.g., Mikulincer & Florian, 1998), marital Satisfaction (e.g., Alexandrov, Cowan, & Cowan, 2005), altruism (e.g., Mikulincer, Shaver, Gillath, & Mitzberg, 2005), caregiving (e.g., Kunce & Shaver, 1994), and happiness (Webster, 1998, 2007).

Implicit relational representations are repetitions of relational experiences, sharing

> a common affective core, that are conceptually encoded in the mind as non-propositional meaning structures. They are the memory basis for implicit

> relational knowledge, our 'gut-level' sense of how significant relationships work (Hall, 2004, p. 71).

Neuroplasticity of the nervous system enables interpersonal experiences later in life to impact and alter mental relational models. Healthy, resonant relating in subsequent life stages can repair damaged early attachments (Badenoch, 2008). Empathic attunement can re-wire implicit regulatory patterns at any point in life. Early interpersonal schemata can be repaired both by genetic factors supporting resilience, and by passing but impactful empathic relationships. "The brain is always seeking integration, and any experience that removes a blockage creates new flow toward complexity (Badenoch, 2008, p. 74).

Other neuroscientific studies also suggest a link between cognitive and spiritual development and confirm construct validity of the SAI. Azari, Nickel, Wuderlich, Niedeggen, Hefter, Tellman, Herzog, and Stoerig (2001) observe that psychology of religion and philosophy of mind literatures hypothesize that "religious experience may be a cognitive attributional phenomenon." (p.1649). Since "religious" in this neuroscience research is understood in a broad generic sense, such studies might be included with research regarding spirituality. Religious experience is a unique and persistent personal event with both a felt sense of immediacy and a "causal claim regarding a religious source for the personal experience" (Proudfoot & Shaver, 1975; Shaver, 1975; Azari et al., 2001, p. 1649).

Neurobiological investigation regarding spiritual experience includes conceptualizations around emotions. Emotions, including thought and affect, contribute

to spiritual experience, but emotions are not well understood. Spiritual experience may be described as “thinking that feels like something” (Azari & Birnbacher, 2004, p. 901).

Using functional neuroimaging, Azari et al. (2001) found religious experience to involve areas of the brain associated with reflexive evaluation of a cognitive press—a frontal-parietal circuit comprised of the dorsolateral prefrontal, dorsomedial prefrontal, and medial parietal cortex. Participating in the study were 12 German-speaking adults, six self-identified as religious (mean age 31) and six self-identified as non-religious (mean age 26). The religious subjects were fundamentalist evangelical who reported having had a conversion experience. The two groups did not differ significantly regarding imaginability, verbal traits, personality, or life Satisfaction. While undergoing positron-emission tomography (PET) imaging, subjects were asked to self-induce a religious state using Psalm 23, to recite a nursery rhyme, and to read a set of instructions. Before and after each scan the felt quality of each target state was measured with the Positive Affect Negative Affect Scale (Watson et al., 1988). While reciting Psalm 23, religious but not non-religious subjects activated the right dorsolateral prefrontal cortex (for cognitive schemas regarding causal relations among attributes), the dorsomedial frontal cortex (site of memory retrieval and conscious monitoring of thought), and the medial parietal precuneus (key to visual memory). Religious experience depends upon the subject’s interpretation (Proudfoot, 1985; Sharpe, 1983). This study found a significant difference between religious and non-religious subjects in neural circuit activation during a brief self-induced religious state. This suggests that in ambiguous situations, religious attributions emerge in the presence of religious cues from religious persons’ internally generated readiness to re-activate religious schemas. Religious experience in this simple

study did not involve limbic (emotion-related) activation, but rather cognitive attributional pathways.

Azari and Birnbacher (2004) observe that

> Consistent with current neuroscientific views, *cognitive* includes both conscious (explicit) and nonconscious (implicit) processes (Marshall, 1987). As a consequence, most theorists today maintain that human emotion is, at the very least, cognitively mediated. That is, the specificity of an emotion involves some kind of evaluation, appraisal, or judgment concerning the context in which the experience occurs (p. 905).

Cognitive dimension of spiritual experience. Religious experience, based on the James-Lange theory of emotion (where feeling arises first then is labeled by thought), has been considered "fundamentally noncognitive, a preconceptual, private, immediate, known feeling that is totally independent from thought and beliefs" (James, 1902; Otto, 1926; Schleiermacher, 1958; Azari & Birnbacher, 2004, p. 905). More recently, religious experience has been found to attributionally account for emotions (Proudfoot, 1985; Spilka & McIntosh, 1995; Spilka, Shaver, & Kirkpatrick, 1985). Religious experience is understood to be substantially cognitive in accessing and formulating causal belief (Azari & Birnbacher, 2004). There is, in fact, a cognitive component in emotion that supplies its "intentional object or belief content" (Azari & Birnbacher, 2004, p. 906). Neuroscience finds a close association between emotional and cognitive systems (Eich, 2000). Cognitive aspects of emotion, and of religious or spiritual experience, may operate at a nonconscious level (Rolls, 1999).

> Newberg and others have hypothesized that religious and mystical experiences are mediated by complex patterns of neural activity involving brain structures of the autonomic nervous system, the limbic system, and neocortical areas (occipital, parietal, and prefrontal cortex). Thus, different mystical or religious experiences are marked by variable and relative contributions of each of these structures (Newberg, d'Aquili, & Rause, 2001, p. 117f.). On this account, one cannot simply "locate" religious experience or God. Central to this view is that the meaning of the experience for the subject is critical (Newberg, d'Aquili, & Rause, 2001, p. 111).
>
> In this regard, their work (and the interpretation thereof) supports the view that religious experience is at the very least cognitively mediated. More specifically, on this account, the essential cognitivity of such experiences is functionally multidimensional, involving seeing the world as a whole, reducing the whole into analyzable parts, abstract thinking (generating theories, beliefs, assumptions), mathematical calculation, causal explanation/interpretation, binary reduction, and assignment of what exists (that is, what is real) (Newberg et al., 2001, p. 46f; Azari & Birnbacher, 2004, p. 911).

There is a cognitive-affective interplay in spiritual experience that relates directly to SAI theory (Hall, 2004) of implicit relational representations. Religious experience assumes a particular frame of cognition and interpretation, not a judgment so much as an attitude and interpretive perspective (Azari & Birnbacher, 2004). The subject may attribute as both source and intentional object of spiritual experience, an external cause such as God (Weiner, 1986). The cognitivity of a spiritually oriented emotional

experience extends broadly beyond simply causal belief to evaluation or appraisal (Ochsner & Barrett, 2001). “By virtue of its cognitive content, religious experience is cognitively structured and socioculturally conditioned. Its concrete nature depends on learned religious beliefs and concepts stored in memory as mental images” (Azari & Birnbacher, 2004, p. 912).

Also directly pertinent to SAI theory (Hall & Edwards, 1996, 2002) for its quality of relationship-with-God component, is the neuroscientific work of Han, Mao, Gu, Zhu, Ge, and Ma (2008). Noting that Christianity encourages surrender to God and appraisal of self from God’s point of view, the researchers used functional magnetic resonance imaging (fMRI) to investigate whether religious belief registers in neural correlates of self-referential processing. Study participants were 28 Chinese-speaking adults, 14 self-identified non-religious (mean age 22.5) and 14 self-identified Christians (mean age 23.6) belonging to local faith communities. The two groups were matched regarding education (two to seven years university) and religious knowledge. During fMRI scanning, they were asked to respond to trait-judgment questions regarding self, Jesus, Buddhist Sakyamuni, a known Chinese politician, and text font size. Results found in non-Christian participants increased neural activity in the ventral medial prefrontal cortex that is associated with reference to oneself. Among Christians, neural activity was enhanced rather in the dorsal medial prefrontal cortex that is associated with submission to another. This neural activation pattern suggested that participants were engaged in self-transcendence, deferring to and dependent on God and on divine evaluation.

A longitudinal study combining constructs. The SAI, as noted, measures both (a) awareness of the presence of God (called in the study “awareness of the Sacred in daily

life") and (b) quality of relationship with God. Wink and Dillon (2002) conducted research on similar constructs, a longitudinal study across the adult lifespan. Their study differed from the SAI in that the quality component was measured according to commitment to spiritual practices and involvement in religious activities, rather than attachment/object relations development. The Wink and Dillon focus on cognitive commitment was similar to the present study's assessment of level of cognitive development. Interestingly, in view of the present study's measure of wisdom development, Wink and Dillon included also reference to negative life events. They understood spirituality as the "self's existential search for ultimate meaning through an individualized understanding of the sacred (Atchley, 1997; Roof, 1993, 1999; Tillich, 1963)" (p. 79). Research data—semistructured interview records—were derived from intergenerational studies at the University of California, Berkeley, Institute of Human Development. The sample, averaging 230 participants, was a randomly selected representation of California newborns in 1928/29 and of 10-to-12 year olds born in 1920/21. All participants had been interviewed four times throughout adulthood: in 1958/59 (when in their 30's), 1969/70 (40's), 1982 (mid-50's/early 60's), and 1997-99 (late 60's/mid-70's). At each interview phase, participants had completed self-report questionnaires (Wink & Dillon, 2002). Data analysis was restricted to a core sample of 130 who were interviewed at all four time periods. Spiritual development was hypothesized to manifest both in awareness of the sacred in daily life and commitment to spiritual practices (Atchley, 1997; Newman, 1982; Wuthnow, 1998). Investigators conjectured that individuals more attuned to psychological conceptualization in young adulthood would become more spiritual in older age (Sinnott, 1994; Shulik, 1988).

Experience of negative life events would increase probability of becoming more spiritual. And young adults involved in religious activities would probably be more spiritual in older age. Interview ratings varied somewhat over the four time periods, generally covering spirituality, religiosity, cognitive commitment, negative life events, and IQ. Cognitive commitment measured degree of introspectiveness, evaluating situations and others' motives, insight, wide interests, and unconventional thinking.

Results (Wink & Dillon, 2002) found in all participants, and particularly in women, a significant increase in spirituality from middle to late adulthood. There was no effect of denomination (Catholic vs. Protestant) regarding change in spirituality over time. Religiosity in early adulthood significantly predicted spirituality in older age. Significant association for women, but not for men, was found between cognitive commitment and negative life events in early life predicting spirituality in older age. Relating to the current study's focus on wisdom, Wink and Dillon (2002) found that, particularly for women, experiences of adversity in the first half of adulthood promoted spiritual development in the second half. For both women and men interaction between negative life events and cognitive commitment significantly predicted spirituality in older age. Neither high cognitive commitment alone nor negative life events alone predicted spirituality, only both together. It would seem that particular psychological qualities are necessary to turn painful events into a deep understanding of life. Wink and Dillon (2002) conclude with an observation (Wulff, 1993) that "spiritual growth is complex and multifaceted" (p. 93).

Wink and Dillon's (2002) references to cognitive commitment, meaning psychological mindedness, insight, and unconventional thinking, would seem to suggest

an association between levels of cognitive and spiritual development, tending to support this paper's research questions. Findings in the Wink and Dillon study regarding negative life events pertain also to the current study's section on wisdom. It seems plausible that committed religious practice would support a strengthening of relationship with God, as measured by the Spiritual Assessment Inventory, and that experience of adversity with reflectiveness fosters increase in wisdom, as measured by the Self-Assessed Wisdom Scale (Webster, 1996).

Wisdom Development

Webster (2007) defines wisdom, as operationalized in the Self-Assessed Wisdom Scale (SAWS), as "the competence in, intention to, and application of, critical life experiences to facilitate the optimal development of self and others" (p. 164). The SAWS understands wisdom as a multidimensional construct (Ardelt, 1997) with holistically integrated dimensions. These have been reduced by exploratory and confirmatory factor analysis (Webster, 2007), to: critical life experience, emotional regulation, reminiscence and reflectiveness, openness, and humor. Each of these dimensions has been explored in prior research linking some aspect of wisdom to spiritual development.

Critical life experience. By critical life experience, Webster (2007) means important life decisions surrounded by turmoil, that are "morally ambiguous, multifaceted, and fraught with unknown outcomes" (p. 167), particularly when consequences are irreversible, or almost. Using a multiple case study approach, Vieten, Amorok, and Schlitz (2006) used 47 respondents actively practicing and teaching religions, spiritual traditions, or transformative practices, as a panel of experts. Participants were nearly all over the age of 50, 90% were college educated or above, 38

were Caucasian, and a few were representatives of U.S. minority ethnicities. The researchers used qualitative research to explore how consciousness can be transformed through spiritual practices and experience. Conducting in-depth structured interviews with scholars and teachers from a wide range of spiritual and religious traditions and current transformational movements, they tried to identify factors common to the transformative process. They found that experiences of oneness and interconnection can occasion perspective shifts, alteration in sense of self in relationship to others and to practice of altruism and compassion. Critical life experience of interconnection and oneness with humanity and creation led to transformation of consciousness and to practice of virtue, particularly compassion and altruism. This appears to be consistent with the conceptualization of spiritual development as measured by the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002), in that the SAI considers maturity to develop with growth beyond instability and self-centeredness to a viewpoint that includes alternate and/or multiple perspectives.

Emotional regulation. By this second dimension of wisdom, Webster (2007) means affect sensitivity, with "emotional attunement and appropriate expression" (p. 166). In developing her Three-Dimensional Wisdom Scale (3D-WS), Ardelt (2003) defined wisdom as "a combination of cognitive, reflective, and affective personality characteristics based on implicit theories of wisdom and explicit wisdom theories from the Eastern wisdom traditions" (p. 284). Her Sample comprised 18 close-knit social groups of older adults with at least eight members, a total of 180 individuals ranging in age from 52 to 87 years, with a mean age of 71 years in the North-Central Florida area. Respondents were 73% female, 72% White, 78% retired. Twenty-nine percent had a high

school diploma, 31% had a graduate degree, and the rest had some college. Participants were asked to complete a questionnaire or be interviewed on personality and aging well, answering 90 items drawn from pre-existing measures.

Based on the range of their scores on the questionnaire, 40 respondents participated further in semistructured qualitative interviews. They were asked about most pleasant and unpleasant events during the past week, month, year, and their entire life, and how they dealt with the unpleasant events. The interviews, averaging from 30 to 60 minutes, were transcribed and analyzed for cognitive, reflective, and affective personality skills participants might have learned from dealing with past hardships (Ardelt, 1998; Park, Cohen, & Murch, 1996). Interestingly, the cognitive component of the 3D-WS was assessed by questions about understanding of life or search for truth, including "knowledge of the paradoxical aspects of human nature, tolerance of ambiguity and uncertainty, and the ability to make important decisions despite life's unpredictability" (Ardelt, 2003, p. 293). This would seem to parallel higher, postformal stages of cognitive development (Commons, 2004). Here we are looking for research associating wisdom with spiritual development. Along with wisdom items, respondents were asked to complete items on psychological health, general life conditions, and social desirability.

Related to Webster's (2007) wisdom component of emotional regulation was Ardelt's (2003) affective dimension of wisdom. Theory guiding formulation of the 3D-WS considered wisdom a personality characteristic, with diminished self-centeredness, understanding of others, positive emotions, sympathy, and compassionate love (Csikszentmihalyi & Rathunde, 1990; Levitt, 1999; Pascual-Leone, 1990). The 3D-WS was found to be a valid and reliable instrument able to tap the cognitive, reflective, and

affective personality characteristics of older adults. It was not used for the current study because the 3D-WS does not include a developmental perspective.

A second study related to Webster's (2007) wisdom dimension of emotional regulation was by Brown and Greene (2006), with development of their Wisdom Development Scale (WDS). They defined wisdom as multidimensional, including self-knowledge, emotional management, altruism, inspirational engagement, judgment, life knowledge, and life skills. Brown and Greene began by interviewing 10 recent, high-performing college graduates chosen for representing varied dimensions of diversity, on Salient aspects of their college experience. Transcription and coding yielded more than 1000 concepts then arranged into "key" and "core" categories. The categories were factor analyzed to construct the WDS, a 141-item, seven-point Likert scale web-based questionnaire, including a Marlowe-Crowne Social Desirablity Scale-Short-Form (Reynolds, 1982). Respondents were 1,188 individuals, 61% female, with a mean age of 21, 80% White. The WDS showed strong content validity with other scales and treatments of wisdom (Holliday & Chandler, 1986; Sternberg, 1985; Baltes & Smith, 1990; Ardelt, 2003). "Webster's (2003) experience, reminiscence (Life Knowledge), and emotions (Emotional Management) relate to the WDS" (Brown & Greene, 2006, p. 16). Pertinent to our interest in wisdom's association with spiritual development is theorists' understanding that wisdom involves "good judgment and advice about important but uncertain matters of life" (Baltes & Smith, 1990, p. 95).

Reminiscence and reflectiveness. Webster (2003) observes that critical life events happen to everyone but not all become wise. The difference is in reflection—identifying and assessing important autobiographical memories (Gluck, Bluck, Baron, &

McAdams, 2005; Studinger, 2001). Wise persons evaluate, derive insight, and learn from their successes and failures, for next time. Their perspective acquires balance, and they develop self-efficacy and useful coping skills.

Bauer, McAdams, and Sakaeda (2005) investigated reminiscence and reflectiveness in the lives of mature, happy people. Their Sample consisted of 125 university students (72% female, mean age 19.8, 33% minority race) and 51 adults (70% female, mean age 51.7, 20% minority race; 80 with college degrees). Participants were asked to write autobiographical memories—high points, low points, and turning points in life. Narratives were analyzed for themes of either social-cognitive maturity (integrative, meaning-making moral reasoning, consolidation of new information to ego development) or social-emotional well-being (intrinsic, humanistic pursuits such as personal growth and happiness, meaningful relationships, and sense of contributing to society). The researchers used the Personal Well-Being scale (Ryff & Keyes, 1995) to measure intrinsic quality of social-emotional happiness, and the Satisfaction with Life Scale (Diener, Emmons, Larson, & Griffen, 1985) to measure integrative qualities of coming to new, deeper understanding of self and others. To measure personality traits they used the Big Five Inventory (John & Srivastava, 1999).

The researchers found that mature people tend to integrate memories framed as social-cognitive growth, and that happy people (happy understood as related to growth and connection to purposes beyond self and to other people) interpret their memories in terms of intrinsic humanistic values. In both studies, of students and adults, growth memories and traits, although correlated, played mostly independent roles in predicting well-being and maturity (Bauer, McAdams & Sakaeda, 2005). “Integrative memories

predicted maturity more strongly than traits, notably Openness" (p. 213). The SAWS (Webster, 2003) sees reminiscence and reflectiveness as a global construct, rather than differentiating integrative and intrinsic memoires, as do Bauer, McAdams, and Sakaeda (2005).

Mascaro, Rosen, and Morey (2004) investigated the aspect of reminiscence and reflectiveness (Webster, 2003) that is concerned with wisdom's cognitive dimension of spiritual meaning-making. They used an operationalization of personal meaning as "positive life regard". . . "a framework or philosophy for viewing one's life as well as a sense of fulfillment related to living in accord with that framework" (p. 846). The Life Regard Index (Battista & Almond, 1973) uses subscales for the two themes (arriving at a philosophy or framework and living in accord with it) and derives an overall life regard or personal meaning score. Looking for discriminant validity or the unique contribution of meaning to positive psychological functioning, the investigators focused on the LRI-framework subscale, rather than the overall score.

Spiritual meaning, according to the concept of positive life regard, related specifically to "viewing one's individual life, but not necessarily life itself, as having meaning." They define personal spiritual meaning as "the extent to which an individual believes that life or some force of which life is a function has a purpose, will, or way in which individuals participate" (Mascaro, Rosen, & Morey, 2004, p. 847). This connects spiritual meaning to calling by Life (God or whatever Force one believes in) to pursue a particular direction. The authors constructed a scale (the Spiritual Meaning Scale) to explicitly connect spirituality and transcendence with an individual's sense of meaning. Using 465 university undergraduates (52% male, mean age 19.12, 84% Caucasian, 90%

Christian), Mascaro et al administered 83 experimental items for the SMS generated form the work of Frankl (1984, 1988) and Wong (1998), along with the Big Five Inventory (John & Srivastava, 1999), and with a social desirability subscale. Wong had developed a Personal Meaning Profile based on implicit meaning constructs of achievement, relationship, religion, self-transcendence, self-acceptance, intimacy, and fair treatment. Results found the construct assessed by the Life Regard Index-Revised framework (philosophy of life) subscale to be "inversely related to depression and anxiety, positively related to hopefulness," to predict "variance in depression and hopefulness beyond that predicted by the Big Five personality factors" (Mascaro, Rosen, & Morey, 2004, p. 857).

Openness. Reflecting on openness, Webster (2003) observes that "since most nontrivial problems are multiply determined, an openness to alternate views, information, and potential solution strategies optimizes the wise person's effort to surmount obstacles efficiently" (p. 166).The study considered in the previous section on reminiscence, reflectiveness, and growth memories in the lives of mature, happy people (Bauer, McAdams & Sakaeda, 2005), included measurement of traits with the Big Five Inventory (John & Srivastava, 1999). A hypothesis of the Bauer et al. study was that growth memories are mainly independent of broad personality traits in predicting well-being and maturity, facets of the good life associated with wisdom. For students, the trait of Openness was found to correlate significantly with intrinsic memories and Psychological Well-Being (Ryff & Keyes, 1995) scores, but not with ego development (maturity) scores. For adults, Openness correlated significantly with integrative memories and ego development (maturity) scores. Findings seem to suggest that young persons connect the Openness characteristic of wisdom to social-emotional values: personal happiness,

meaningful relationships, and contributing to society. Adults seem to relate Openness in wisdom to social-cognitive values: integrative, meaning-making, moral reasoning values.

Humor. Webster (2003) observes that while humor is acknowledged as a principal component of wisdom, humor research is minimal. Humor associated with wisdom is not Sarcastic or deprecatory, but recognizes irony, reduces stress, and elicits perspective on life. Wink and Dillon (2008) in their longitudinal study hypothesized that spirituality would associate with wisdom because "both are linked to an appreciation of the paradoxical, contextual, and contingent natures of knowledge and of life" (Baltes & Staudinger, 2000; Sinnott, 1994; Wink & Dillon, 2008, p. 104). They found spirituality related to wisdom in late life.

Thorson, Powell, Sarmany-Schuller, and Hampes (1997) developed a Multidimensional Sense of Humor Scale, then conducted a series of experiments on the association of humor with psychological health. The MSHS was found to correlate positively with "exhibition, dominance, warmth, gregariousness, assertiveness, excitement seeking, creativity, intrinsic religiosity, arousability, positive emotions, extraversion, and cheerfulness." It correlated negatively with "neuroticism, pessimism, avoidance, negative self-esteem, deference, order, endurance, aggression, depression, death anxiety, seriousness, perception of daily hassles, and bad mood" (Thorson et al., p. 617). In a Sample of 199 young adults (mean age 19.5), and 214 older persons (mean age 77.9), the mean MHSH score for younger persons was significantly higher. The investigators conjectured that younger persons are more likely to have been exposed to more purported humor in the media, experience more necessity for humor creation in social situations, and gain more social approval for quick wit. Younger and older persons

were found to construe humor differently. The aged, nearest to death, were found to fear death the least (Thorson & Powell, 1993). Vaillant (1997) considered humor as "among the most mature, and the most elegant of the defense mechanisms" (Thorson et al., 1997, p. 606). Erikson concluded, "'I can't imagine a wise old person who can't laugh. The world is full of ridiculous dichotomies'" Friedman, 1999, p. 468; Webster, 2003, p. 167).

Wisdom might play a moderator/mediating role in the association between cognitive/ moral and spiritual development. Shedlock (2003) found that in complex, integrated personalities, ego maturity can attain wisdom. By "wisdom" the investigator meant adjusting to contradiction and achieving inner balance. Wise persons are understood to use multidimensional, paradoxical reasoning, to see meaning in good and bad life events, to achieve ego integrity, to show concern with caring, and to engage in generative action. They show openness to experience, acceptance, and psychological-mindedness (Kramer, 2003).

Question of Exclusive Domains

In order to use the SAWS as a mediating/moderator variable between the MHC measure and the SAI, the SAWS and SAI need to represent exclusive domains. A question might be raised whether the constructs measured by the SAWS and SAI overlap to some degree. Conceptually, it would seem that a high spiritual maturity score might correspond to a high wisdom score. There might be some overlap in components of the two scales. Theoretically and in their construction, the two scales are distinct. As we have seen, the SAWS was constructed from factor analysis of many and wide-ranging concepts about wisdom; the SAI was constructed based on object-relations/attachment theory. The literature does not show research on this question. It might be advisable,

when participant data are in, to run a statistical analysis to find out whether component constructs in the two measures share variance to a significant degree.

Conclusion

The purpose of this chapter was to expand on chapter one which offered an introduction to the topic of association between stage of cognitive/moral and of spiritual development with a rationale for the current study and its value. Chapter two provided a review of some literature to date on each of the constructs on which this study will be based. The principal research elements with their respective instruments include: cognitive development assessed through a Model of Hierarchical Complexity (Commons, 2006) moral dilemma; theistic spiritual development with the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002); and a possible moderator/mediating variable of wisdom development with the Self-Assessed Wisdom Scale (Webster, 2003). For each major component of the topic, important conceptual and empirical literature was cited. Commentary related empirical literature to date with intent of this study. The following chapter will discuss its methodology in more detail.

Chapter 3

Methodology

Participants

The population was undergraduate and graduate student adults. Age range was between 22 and 70 years of age. Universities with undergraduate and graduate education and psychology departments were selected primarily from the Midwestern region of the United States, for a fairly representative Sample of ethnicity and socioeconomic level, as well as gender and age. Since this study concerns spiritual rather than religious development, the SAI's Christian orientation was broadened by asking non-Christian respondents to mentally substitute references to "God" with "higher power" and "church" with "place of worship." Approximately 7,500 potential participants received the survey. For the purpose of this study, responses to the MHC instrument from at least 100 participants was determined as a methodologically appropriate Sample size (personal communication, Commons, 2008). For statistical analysis of the entire survey, a Sample size of at least 100 is considered adequate for structural equation modeling (Kline, 1998, p. 112).The Call for Participants explaining the study was sent to potential participants.

Instruments

The survey comprised a Model of Hierarchical Complexity moral dilemma The Helper-Person Problem (Commons, 2009), the Spiritual Assessment Inventory (Hall & Edwards, 1996, 2002), and the Self-Assessed Wisdom Scale (Webster, 2003). The Helper-Person Problem is reprinted with permission (Commons, personal communication, 2012) in Appendix D. The Spiritual Assessment Inventory can be obtained from Dr. Todd Hall (www.drtoddhall.com). The Self-Assessed Wisdom Scale can be obtained from Jeffrey Dean Webster (jwebster@langara.bc.ca). Authors of these measures approved their use for this study free of charge. A summary of study results will be communicated to the authors of the three measures.

Sampling Procedures

University or college admissions directors or registrars and alumni directors were asked to randomly select a number of their current or past students, to whom to send the one-page email Call for Participants. In order to focus the study on spiritual rather than religious development and to broaden the population to include non-Christian as well as Christian participants (considering the SAI's Christian orientation), the Call for Participants asked non-Christians to mentally substitute "higher power" for "God" and "place of worship" for "church." Also included in the Call for Participants was Cleveland State University Institutional Review Board approval, informed consent, and an institution-specific web link to access the survey. A copy of the IRB approval letter is included in Appendix I. As an incentive, participants were eligible to register for a weekly ePrize drawing for a $100 gift card to Amazon.com. The full survey with three questions about an MHC moral dilemma and two Likert-scale instruments (the SAI and

SAWS) was found in trial run to take about 30 minutes. Participant names and addresses for the prize were not associated with their responses to the survey. In order to assure participant anonymity, this investigator did not have access to names or web addresses of potential participants.

On a demographic questionnaire, participants were asked to indicate their age, gender, religion/spirituality, level of education (degrees attained, years in school), present/past occupation (professional/skilled/unskilled), marital status, parents' and spouse's education and occupation, geographical area of residence, current/past university, current program of study, family of origin size, and number of children/grandchildren. The population accessed in this way constituted a convenience Sample that would be likely to result in a normal distribution of scores among current and past undergraduate and graduate students, mainly in the Midwestern United States.

Participants were elicited through this researcher's phone and email contact with admissions directors/registrars and alumni directors of U.S. universities in the Midwest. IRB approval to solicit participants from these organizations was obtained, initially from Cleveland State University, and later from other universities that required the same from their own IRBs. Initial phone contacts described the study and requested participation. An email message was then sent, including attached documents: a Letter to Directors, Explanation of the Study, the CSU IRB approval form, and the Call for Participants, as described in the previous section.

Surveys were communicated and participants completed them through SurveyMonkey, an online survey tool. In the Call for Participants each university or college had a specific web link in order to enable a site-specific collector for their own

participants. SurveyMonkey customized survey questions, enabled analysis of response data, and assured anonymity. The researcher, by examining numerical respondent IDs, was able to determine that duplicate surveys were not submitted. Responses in the SurveyMonkey database were transferred to a flashdrive that will be kept in the office of CSU faculty/dissertation chair Dr. Elizabeth Welfel. The data will be kept for three years, as required by law, so that IRB personnel may have access to it, should the need arise.

Implied consent. Potential research participants received online the Call for Participants, informing them about the study, and inviting them to participate. Participants' clicking on the web link to the survey constituted their choice to participate.

Risks and benefits. Participation did not constitute any known or anticipated emotional or physical risk. A minimal psychological discomfort might have been that questions about spirituality might have made some participants slightly uncomfortable. The Spiritual Assessment Inventory asks about relationship with a personal God; participants resistant to such a concept were asked to mentally substitute "higher power" for "God." For questions that referred to "church" they were asked to mentally substitute "place of worship." This risk was comparable to daily life, that is, similar in effect to ordinary eventualities such as passing a church or seeing a Christmas display, so was minimal. The study posed no risks above and beyond those encountered during the course of everyday living.

If participants had questions about their rights as research subjects or comments about the study, the contact phone number for Cleveland State University's IRB and the researcher and supervisor's email addresses were provided.

The primary benefit of this study was communicated to participants as raising awareness of levels of cognitive, spiritual, and wisdom development. By completing the instruments they might gain a fuller understanding of the components of cognitive and wisdom development and how these contribute to spiritual development. Participants might infer from the items some advantages of aspiring to attain higher levels of cognitive, wisdom, and spiritual development. Participants might be interested in pursuing additional information about their levels of cognitive, spiritual, and wisdom development. They might be motivated to promote development among individuals whom they influence.

Measures

Data collection, as noted, included a brief demographics questionnaire and a survey consisting of three self-report measures: the Model of Hierarchical Complexity moral dilemma The Helper-Person Problem (Commons, 2009), the Spiritual Assessment Inventory (Hall & Edwards, 2002), and the Self-Assessed Wisdom Scale (Webster, 2003). The three measures were administered online to current and past undergraduate and graduate students who chose to participate in this study. Level of cognitive development was measured through the Helper-Person Problem constructed according to the Model of Hierarchical Complexity (Commons & Pekker, 2004) (see Appendix C). Level of spiritual development was evaluated through the Spiritual Assessment Inventory (Hall and Edwards, 1996, 2002) (see Appendix E). And level of wisdom development was measured through the Self-Assessed Wisdom Scale (Webster, 2003) (see Appendix F).

Review of the chart (Table 1) comparing stage theories shows a consensus of theorists on the progression of developmental stages. The current study is thought to address a topic not covered specifically by any of these theories: spiritual development and whether it correlates significantly with cognitive development. Also not believed to be included to date in stage theories is attention to wisdom development.

Research Questions

This paper aimed to consider whether moral development using a Model of Hierarchical Complexity moral development instrument correlates with spiritual/religious development. The research questions are: (a) Is there a relationship between cognitive development as measured by the Model of Hierarchical Complexity and spiritual development as measured by the Spiritual Assessment Inventory in adult students? (b) Does level of wisdom development mediate the relationship between cognitive and spiritual development? (3) Are demographic factors significantly associated with level of cognitive, spiritual, or wisdom development? Or considering the question from another perspective: Considering results of the study—the degree of correlation among cognitive, wisdom, and spiritual development—what are the effects of controlling for particular demographic variables?

Regarding demographic data, the study asks whether the following variables significantly associate with cognitive development level (then respectively, with wisdom and spiritual development): (a) age, (b) gender, (c) religion/spirituality, (d) level of education (degrees attained, years in school), (e) present/past occupation (professional/skilled/unskilled), (f) marital status, (g) parents' and spouse's education and

occupation, (h) geographical area of residence, (i) current/past university, (j) current program of study, (k) family of origin size, (l) number of children/grandchildren.

Data Analysis

Data from the MHC moral development assessment was analyzed using Rasch analysis and the Saltus model. The other instruments (SAI and SAWS) were scored using Survey Monkey, without Rasch analysis, following the scoring established by the instrument authors (Hall & Edwards, 1996, 2002; Webster, 2003). Structural equation modeling was the statistical approach for analyzing the total data.

Rasch analysis. The Rasch model of statistical analysis is "designed specifically to examine hierarchies of person and item performance" (Dawson-Tunik, Commons, Wilson, & Fischer, 2005, p. 172). It can be used to "transform raw data into abstract equal-interval scales" (Bond & Fox, 2001, p. 7). The model displays on a single interval scale, estimates of both person proficiency and item difficulty. "The product of a Rasch analysis is an equal-interval scale, along which both item difficulty and respondent performance estimates are arranged. Each unit on the scale is referred to as a logit, each of which represents an identical increase in difficulty" (Dawson-Tunik, Commons, Wilson, & Fischer, 2005, p. 179).

> Rasch analysis provides indicators of how well each item fits within the underlying construct. Items that do not fit the unidimensional are those that diverge unacceptably from the expected pattern (Bond & Fox, 2001, p. 26). (The model yields a pattern of) item/person performances (Bond & Fox, p. 29).

For an item/person map see Bond and Fox, 2001, p. 35.

The Rasch model is necessary to calculate the cognitive development scores for this study because it must be used to evaluate the degree to which scores match the MHC theory of hierarchical sequence. Stage theory, as we have seen, holds that cognitive capacities develop in a particular order. The Rasch model allows investigators to determine, for example, whether item sequence indicates that representational systems (cf. Bond & Fox, 2001) are less challenging than single abstraction items which are less challenging than abstract mapping items. Software for Rasch model computation (such as Winsteps), provides detailed information about both individual performance and item functioning, allowing simultaneous examination of individual and group effects.

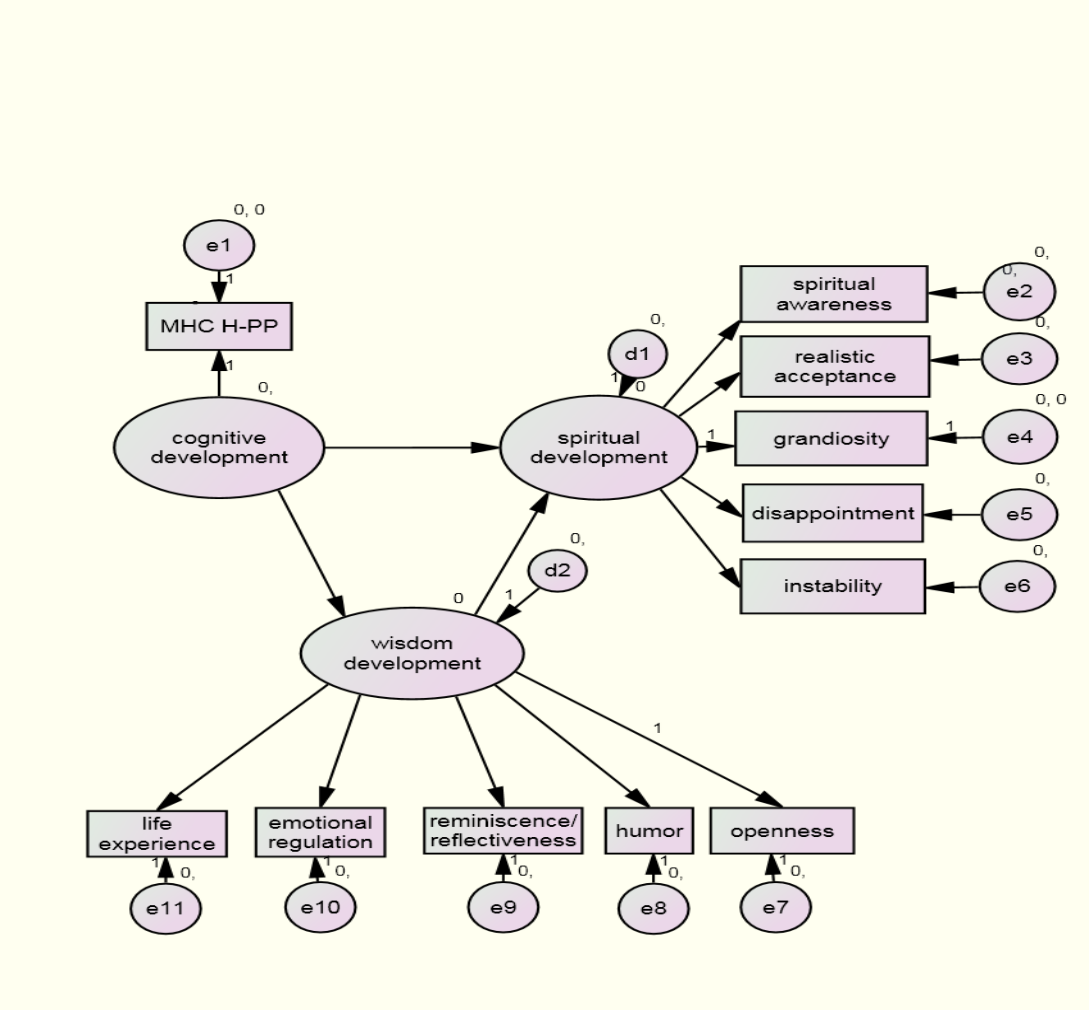
> ***Structural equation modeling.*** The structural equation model can be visualized in a path diagram with rectangles, ellipses, and arrows. The path diagram is read left to right. The ellipses symbolize latent variables plus errors of measurement and prediction. Errors of measurement and prediction are generally omitted for clarity of the diagram. The small rectangles associated with ellipses represent measured, observed variables. Arrows show associations between variables. Arrows with straight lines pointing in one direction show direction from predictor to outcome. Curved lines with arrows in both directions represent correlations, nondirectional associations (Cavanaugh & Whitbourne, 2003, p. 96).

Structural equation modeling is comprised of the structural and the measurement model. The measurement model indicates relationships between the observed data, such as test scores, and the unobserved, latent variables, such as personality characteristics. “The structural model describes relationships among the latent variables and any observed variables that are not indicators of latent variables.” (Cavanaugh & Whitbourne,

2003, p. 96). The measurement and structural models together offer an integrated statistical model. With measurement error eliminated, SEM can be a means of evaluating relationships among variables in a comprehensive way.

Path analysis with structural equation modeling for association between psychological and spiritual development. Relationships among variables can be: association, direct effect, or indirect effect. Correlation between variables corresponds to a nondirectional association relationship. The direct effect is central to SEM, a directional relationship between an independent and dependent variable, usually determined by analysis of variance or multiple regression. When an indirect effect occurs, an independent variable relates to a dependent variable through one or more mediating variables. “The combination of all direct and indirect effects of an independent variable on a dependent variable is called the total effect of the independent variable” (Cavanaugh & Whitbourne, 2003, p. 97).

Figure 3.1. Path Diagram for This Study



The principal hypothesis regarding directional association of the variables is from cognitive to spiritual development. This is because cognitive development seems to measure a more restricted dimension of human development than does spiritual development. Spiritual development seems to be generally understood as the broader construct, comprising along with intellectual, other factors such as affective, perspective-taking, meaning-finding, judging, evaluative, self-giving, decision-making, and transcendence-considering elements.

Wisdom development is hypothesized to mediate the relationship between cognitive and spiritual development, in that it incorporates dimensions of cognitive development that represent qualities typically found in higher levels of both cognitive and spiritual development. The possible mediation of wisdom development seems appropriate for this study because the instrument to measure spiritual development (the SAI) covers only a restricted range of spiritual development, with a ceiling effect of "realistic acceptance." The construct of spiritual maturity is generally understood to extend beyond that level.

It is possible that the directional order of causation for the variables might be reversed. Higher spiritual development might cause increase in cognitive development. It seems implausible that an individual who had attained a high level of spiritual development would not also be characterized by modes of thought that grasp the larger picture, empathically see the other person's perspective, tolerate ambiguity, and value diversity. There seem to be cases where persons who seem not to have attained a high level of cognitive development, were nevertheless Saintly, meaning that they were widely known for extraordinary spiritual maturity. Helminiak (1987), using Lonergan's understanding of "authenticity" (Gregson, 1988), notes that Saints who died at a young age or did not have opportunity for much education or broadening of psychological perspective, nevertheless lived with high authenticity whatever cognitive level they had attained, so were far advanced spiritually. This study understands spiritual maturity from an object relations perspective to mean, as we have seen: closeness or attachment to God, positive God image (Lawrence, 1997; Sorenson, 1994), sense of support in a spiritual community, selfless service, and spirituality/religion as a guiding direction for one's life

(Hall, 2002; Hall & Edwards, 1996). It could be that individuals who first attain a high level of spiritual development, from that vantage point then expand their intellectual horizons and advance in cognitive development. An objection might be raised that one might be highly authentic and service-oriented as a secular humanist, not a theist, but that would entail a different study. Results of this study, hopefully, will indicate a directional order between the variables for current and past adult university/college students.

Wisdom development may be a mediating variable. “A mediator is defined as a variable that explains the relation between a predictor and an outcome (Barron & Kenny, 1986; Holmbeck, 1997; James & Brett, 1984)” (Frazier, Tix, & Barron, 2004, p. 116). One “looks for mediators if there already is a strong relation between a predictor and an outcome and one wishes to explore the mechanism behind that relation” (Frazier, Tix, & Barron, 2004, p. 117). Mediation analysis asks why or how there is an association between a predictor and an outcome. Wisdom development as a mediating variable asks “why” or “”how” cognitive development predicts spiritual development.

> According to a method by Kenny and colleagues, “there are four steps (performed with three regression equations) in establishing that a variable” (wisdom development) “mediates the relation between a predictor variable” (cognitive development) “and an outcome variable” (spiritual development) (Baron & Kenny, 1986; Judd & Kenny, 1981; Kenny, Kashy, & Bolger, 1998; Frazier, Tix, & Barron, 2004, pp. 125).
>
> The first step is to show that there is a significant relation between the predictor and the outcome. The second is to show that the predictor is related to the mediator. The third step is to show that the mediator (wisdom) related to the

> outcome variable (e.g., spiritual development). (The path between mediator and outcome) is estimated controlling for the effects of the predictor on the outcome. The final step is to show that the strength of the relation between the predictor and the outcome is significantly reduced when the mediator is added to the model. (Frazier, Tix, & Barron, 2004, pp. 125-126).

If wisdom is a complete mediator, there will be no relation between cognitive and spiritual development after wisdom development is included in the model. If wisdom development is a partial mediator, including wisdom will significantly reduce the association between cognitive development and spiritual (Frazier, Tix, & Barron, 2004).

After ascertaining a structural equation model, the next step is to compute estimates. “The goal of the analysis is to minimize the difference between the estimated and observed matrices. This difference is referred to as the residual matrix.” (Cavanaugh & Whitbourne, 2003, p. 97). When repetitions of the analysis cannot be further reduced, “the estimation procedure is Said to have converged on a solution, which becomes the final model” (p. 97). “How good a given estimation is defines the fit of the model to the observed data. This determination is a statistical one that takes into account features of the data, the model, and aspects of the estimation method” (Cavanaugh & Whitbourne, 2003, p. 97). As Sampling size increases, Sampling error becomes less problematic. “The comparison of estimated parameters and tests of fit is achieved most often through the use of specialized computer programs” (p. 97), such as AMOS. Structural equation modeling is similar to related correlation approaches, such as analysis of variance and multiple regression. All are based on linear models and require meeting certain assumptions. SEM, however, differs from ANOVA and multiple regression in three

ways: First, SEM requires a formal specification of the model to be estimated and tested. Thus, the researcher must state explicitly all the hypothesized relationships among the variables of interest prior to embarking on the study. Second, SEM provides the capacity to test relationships among latent variables isolated from the effects of unreliability and uniqueness. Third, the statistical indicators obtained in SEM do not have clear outcomes or interpretations, compared to those obtained in other approaches.

Overall, SEM is a more comprehensive and flexible approach to research design and data analysis than any other single approach in common use (Hoyle, 1995).

> Indeed, ANOVA, multiple regression, and factor analysis are all special instances of SEM. Clearly, SEM provides a way to test more complex and specific hypotheses, thereby providing an extremely powerful research tool" (Cavanaugh & Whitbourne, 2003, p. 98).
>
> To test hypotheses in the behavioral and social sciences about relationships among variables that are either observed or latent, structural equation modeling offers a comprehensive statistical method (Cavanaugh & Whitbourne, 2003, p. 95). Advantages are that it is a commonly-used model, more flexible than regression, and can provide "information for degree of fit of the entire model" (Frazier, Tix, & Barron, 2004, p. 128).

Summary. This study hypothesized that level of cognitive development as measured by the MHC Helper-Person Problem associates with level of spiritual development as measured by the Spiritual Assessment Inventory. Wisdom assessed with the Self-Assessed Wisdom Scale was hypothesized to mediate the relationship between cognitive and spiritual development. Structural equation modeling with path analysis was used to

examine the direction and degree of influence of the levels of cognitive and wisdom development on spiritual development.

Chapter 4

Results

The purpose of this chapter is to provide results from the statistical analyses. Testing was conducted to find whether there is a correlation between cognitive development from a moral perspective and spiritual development. The study asks (a) whether there is a relationship in adults between Model of Hierarchical Complexity (Commons & Pekker, 2004) Helper-Person Problem-assessed (Armon, 1984) cognitive development and Spiritual Assessment Inventory-assessed (Hall & Edwards, 1996, 2002) spiritual development. The study asks (b) whether Self-Assessed Wisdom Scale evaluated (Webster, 2003, 2007) wisdom development mediates the impact of cognitive on spiritual development. In addition the study asks (3) whether demographic aspects—gender, age, education level, socioeconomic status, religious affiliation/disaffiliation—relate significantly to level of cognitive, spiritual, or wisdom development.

The participants responded to demographic questions (www. dareassociation.org, 1989-2007). The sample demographics pertinent to this study were: gender, age, level of education, socioeconomic status, and religion/spirituality. MHC demographic questions that were not used with this study (marital status, area of residence, current/past university, program of study, family of origin size, and number of children or

grandchildren) might be useful to future researchers. The demographic characteristics of this study's Sample, as they are indicated for Hypothesis 3, are summarized here. There were 35 men (26%) and 99 women (74%). Ages ranged from 18 to 73 (M = 35, SD = 12). Levels of education were grouped into three categories: (1) high school diploma [N = 32], (2) Associate and Bachelor degrees [N = 55], and (3) post-graduate degrees [N = 44]. Socioeconomic status was determined by occupation (or for students, by occupation of their parent or spouse) in two groups: skilled [N = 47] and professional [N = 77]. Since few participants reported unskilled or semi-skilled occupations [N = 6], these were not included. Religious affiliation or disaffiliation was analyzed by participant responses in three groups: (1) Catholic [N = 42], (2) Protestant [N = 45], and (3) [N = 35]: Agnostic [N = 3], Spiritual, not religious [N = 19], and Neither religious nor spiritual [N = 13]. Since few participants reported being Orthodox [N = 3], Jewish [N = 2], or Other [N = 4], they were not incorporated in the analysis.

The demographic questionnaire was followed by three self-report measures—of cognitive, spiritual, and wisdom development. The MHC Helper-Person Problem (Armon, 1984) asked participants to read five discussions of guidance and assistance by helpers representing each of five levels of cognitive development. Participants then rated each of the helpers according to (a) their method of offering guidance and assistance, (b) how well each helper notified their person, and (c) how likely the participant would be to accept the respective helper's guidance and assistance. Rating was on a six-point Likert scale where the lowest number signified a rating of "extremely poor" and the highest "extremely good." The Helper-Person Problem may be found in Appendix C.

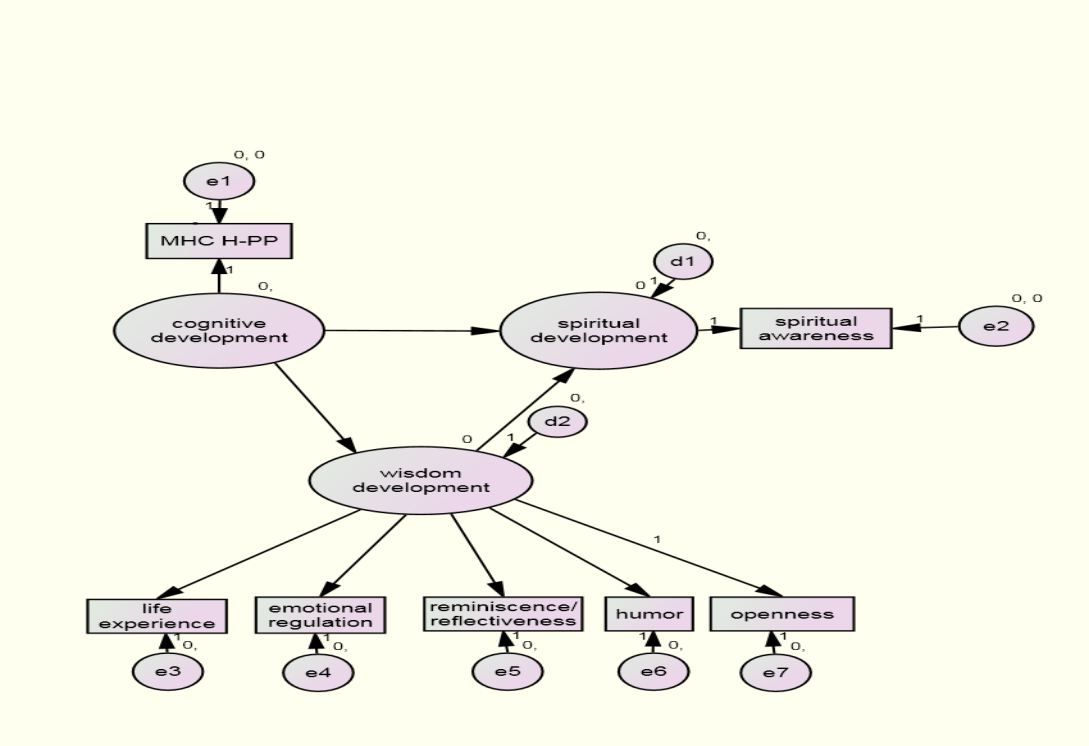
The participants then completed the 47-item SAI (Hall & Edwards, 1996, 2002), with a five-point Likert scale from "not at all true" through "very true." Participants for whom the term "God" was unacceptable were asked to substitute "higher power" or something similar. The subscales measured (1) contemplative awareness of divine presence (19 items), and (2) character of relationship with God, according to traits of (a) instability (9 items), (b) disappointment with God (7 items), (c) grandiosity (7 items), and (d) realistic acceptance (7 items). To detect socially desirable responding, an impression management scale was included (5 items). The Spiritual Assessment Inventory may be found in Appendix E.

For the SAWS (Webster, 2003) participants responded to 40 items on a six-point Likert scale from lowest "strongly disagree" to highest "strongly agree." Eight items represented each of five dimensions of wisdom: adverse life experience, emotional regulation, emotional regulation, humor, and openness. The Self-Assessed Wisdom Scale may be found in Appendix F.

Statistical Analyses

Structural equation modeling (SEM) using AMOS (18) tested Hypotheses 1 and 2. PASW (Predictive Analytics Software, Version 18) was used to test assumptions of normality, linearity, and homoscedasticity of residuals, and Hypothesis 3. Participant responses on the Helper-Person Problem were scored through Rasch analysis with Winsteps software (Version 3.72). For the hypothesized model see Figure 3.1, p. 123.

Figure 4.1 Path Diagram, Revised



The latent construct cognitive development was measured by one indicator, the MHC Helper-Person Problem, using Rasch analysis. The latent construct wisdom development had five indicators measured by subscales of the Self-Assessed Wisdom Scale (SAWS): life experience, emotional regulation, emotional regulation, humor, and openness. It was hypothesized that cognitive development affects wisdom development which in turn affects spiritual development. The latent construct spiritual development was measured by the Spiritual Assessment Inventory (SAI) with five subscales: sa, realistic acceptance, grandiosity, diSappointment with God, and instability in relationship with God.

Assumptions. Assumptions—normality, linearity, and homoscedasticity of residuals—were assessed with PASW. The dataset contains responses from 217 individuals. There were complete data for 134 participants (62%), 35 men and 99 women,

on the eleven variables of interest. Eighty-two participants (38%) were missing data on one or more of the three manifest variable measures (MHC, SAWS, or SAI). This analysis used only complete cases (N = 134). For structural equation modeling, a minimum of 100 cases is generally considered a satisfactory sample size (Ding, Velier, & Harlow, 1995, in Schumacker & Lomax, 2010).

Mahalanobis distance analysis found that one outlier exceeded the chi-square critical value for statistical significance (X^2 cv = 20.52) with an extremely high score on the (SAWS) Emotional regulation subscale. That case was deleted. Normality was within normal limits for eight of the eleven measured variables (MHC H-PP, Sas, Realistic Acceptance, Grandiosity, DiSappointment, Instability, Life Experience, Emotional Regulation, Reminiscence/Reflectiveness, Humor, and Openness). Their *z* skewness did not exceed +/- 3.0 (MHC H-PP = -1.13, Sa = 1.00, Realistic Acceptance = .52, Life Experience = -1.58, Emotional Regulation = -.40, Reminiscence/Reflectiveness =-1.30, Humor = -1.36, Openness = -1.48). "Data sets with absolute values of univariate skew greater than 3.0 seem to be described as 'extremely' skewed by some authors" (Kline, 1998, p. 82). When skewness is nonnormal, the solution is degraded. Data sets with extremely skewed *z* scores (Disappointment = 3.80, Instability = 6.76, and Grandiosity = 7.99) were transformed. Using inverse transformation, the *z* skewness of Grandiosity became -2.35, and Instability 0.09. With logarithmic transformation, the *z* skewness of Disappointment became 0.37. Multivariate statistics are generally considered robust to violations of normality (Blunch, 2008). The manifest variables are now designated: MHC H-PP (cognitive development), Life Experience, Emotional Regulation, Reminiscence/Reflectiveness, Humor, and Openness (wisdom development), and Sa,

Realistic Acceptance, Grandiosity, Disappointment, and Instability (spiritual development) (See Table 4.1.)

When the SAI subscales were controlled for Impression Management, structural equation modeling failed to achieve convergence. Numerous attempts to respecify the model resulted in poor model fit according to CFI, TLI, and RMSEA statistics, (impossible) negative variances, or simply failure of the AMOS operation, accompanied by output error messages. Since controlling for IM resulted in SEM non-convergence, final model modifications did not control for IM. Hall and Edwards (2002) support this approach: "Further research is needed to establish the IM subscale as a useful measure of test-taking attitude" (p. 353). Hall, Reise, and Haviland's (2007) SAI article does not refer to the IM subscale.

Might the factors wisdom development and spiritual development overlap—both tapping largely into the same qualities? Correlation was used to test for independence of the two latent variables—wisdom development as measured by participant means on the SAWS subscales and spiritual development as measured by participant means on the SAI subscales (Table 4.2). The relationship between wisdom development (as measured by the SAWS) and spiritual development (as measured by the SAI) was investigated using Pearson product-moment correlation coefficient.

None of the correlations approach collinearity. Three of the correlations are significant (Spiritual Awareness with Emotional Regulation [.20], Spiritual Awareness with Reminiscence/Reflectiveness [-.21], and Disappointment with Humor [-.18]). Pallant (2005) recommends ignoring correlation significance and focusing on shared variance. The significant correlations squared as coefficients of determination show that the latter

two explain a small proportion of the variance in participant scores (Spiritual Awareness with Emotional Regulation .04 [4% of their variance]; Spiritual Awareness with Humor .05 [5%], and Disappointment with Humor .03 [3%]). "Some researchers use r = .85 as a rule-of-thumb cutoff for this assessment, fearing that correlations above this level signal definitional overlap of concepts" (Discriminant validity, NCSU). Generally low correlations support the discriminant validity of the constructs wisdom development and spiritual development.

Table 4. Correlations between Measures of Wisdom and Spiritual Development

Measures	Wisdom: Life Experience	Emotional Regulation	Reminiscence/ Reflectiveness	Humor	Openness
Spiritual Awareness	-.03	-.20*	-.21*	-.08	-.17
Realistic Acceptance	.08	-.03	.03	-.10	-.11
Grandiosity (i)	-.06	-.12	-.15	-.13	-.02
Disappointment (l)	.13	-.06	-.05	-.08*	.00
Instability(i)	.06	.06	.12	.06	-.01

Mahalanobis distance outlier case deleted from all variables. i = inverse transformation; l = logarithmic transformation
*p < 0.05

To identify possible multicollinearity, each independent variable may be considered a dependent variable and regressed against the other independent variables. Tolerance represents the amount of the selected independent variable's variability that is not accounted for by the other independent variable (Hair et al., 2006). With Spiritual Awareness (the SAI subscale score) as dependent variable and the mean of the SAWS subscale scores as independent variable, R^2 = .045. Four and a half percent (4.5%) of the total variance in Spiritual Awareness was found to be explained by wisdom development. Tolerance = 1.00 - .045 = .96. The tolerance value of Spiritual Awareness against

wisdom development (the mean of the SAWS subscales) is .96. A high tolerance value means a small degree of multicollinearity. Higher amount of multicollinearity is shown in lower tolerance values (Hair et al., 2006). With wisdom development (the mean of the SAWS subscales) as dependent variable and cognitive development (MHC H-PP) as independent variable, r = .01 and R^2 = .00. Tolerance is 1.00 - .00 = 1.00. The high tolerance means a small degree of multicollinarity.

Analyses of constructs. For cognitive development with the MHC Helper-Person Problem, as noted at the beginning of this chapter, participant scores were derived from their rating a Helper on (a) their method of offering a Person guidance and assistance, (b) the degree to which they informed the Person, and (c) how likely would be the participant to accept the Helper's guidance and assistance. Ratings on the six-point Likert scale ranged from extremely poor to extremely good (see Helper-Person Problem, Appendix C). Participant responses were analyzed by Rasch analysis (Winsteps program). As discussed in Chapter 1, the participant responses were normally distributed by the Rasch method itself, with gaps between sections of the distribution separating the participants' cognitive levels. Participant responses fell within a normally distributed range of hierarchical levels. As expected in MHC theory for this study's sample of undergraduate and graduate students and alumni, most scores ranged from formal through systematic levels of cognitive development.

The cognitive development latent construct is, in theory, more strictly developmental than the latent construct of wisdom development. The five wisdom subscales represent aspects that may be considered similarly contributory to wisdom: a higher sum of subscale scores might signify a higher level of wisdom development.

Cognitive development, in contrast, is measured by hierarchical levels, each of which represents a qualitative leap in reasoning. Participant scores are not derived by simply averaging five aspects for an overall total score. With Rasch conversion of scores to interval measurement, the participant's Salient response frequency indicates their probable level of cognitive development.

Regarding spiritual development measured by the SAI, three of the five indicators—Grandiosity, Disappointment, Instability—indicate negative characteristics: grandiosity, disappointment with God, and instability in relationship with God. Results had to be reverse signed (negative became positive and vice versa) so that higher scores indicate increased spiritual development. Grandiosity, Disappointment, and Instability then became measures of non-grandiosity, non-disappointment, and non-instability, so that higher SAI subscale scores indicate higher spiritual development. Spiritual development subscale scores, in fact, might realistically be expected to manifest much more variability than SAWS scores, and did. Zero-order correlations (**$p < 0.01$) for Spiritual Awareness with Realistic Acceptance (0.68**), Disappointment (-0.16**), Instability (-0.22**), Grandiosity (0.32**). Realistic Acceptance with Disappointment (-0.25**), Instability (-0.32**), Grandiosity (0.06). Disappointment with Instability (0.53**), Grandiosity (0.09). Instability with Grandiosity (0.17**) (Hall and Edwards, 2002, p. 351)

Hall and Edwards conducted factor analytic studies (1996, 2002, 2003 [unpublished manuscript]) to estimate reliability of the factor scales, measuring internal consistency with Cronbach's coefficient alpha. Each subscale, considered as a measure of its respective construct, demonstrated good internal consistency

> reliability (.73 to .95). After multiple revisions of the SAI with different samples, the factor structure (was found to be) very stable and the scales are reliably measuring the constructs they are intended to measure (Hall, Reise, & Haviland, 2007, p. 159).

SEM analysis found that, although the five SAI subscales work well together (Hall & Edwards, 2002), data from this study resulted in poor SAI subscale loading onto spiritual development as a unitary latent construct. Using a hypothesized SEM model with the five SAI subscales as manifest variables for the factor spiritual development, the standardized regression weights (reverse-signing Grandiosity, Disappointment, and Instability) were: Spiritual Awareness .15, Realistic Acceptance.76, Grandiosity .18, Disappointment -.98, and Instability .09. The subscales in combination did not load substantially and evenly enough on spiritual development to construe it as a single construct. The SAI subscales as manifest variables were found to constitute separate factors. The implied hypothesis that the SAI would measure spiritual development as a single unitary construct was, therefore, not supported. Structural equation modeling only converged with adequate model fit when each of the SAI subscales was treated as a separate latent spiritual development construct. The modified SEM model used each of the SAI subscales separately as a manifest variable for the factor spiritual development. Figure 4.2 illustrates Spiritual Awareness (contemplative awareness of God) as a single manifest variable for spiritual development. The SEM model was subsequently run substituting for Spiritual Awareness, each of the other four SAI subscales (Realistic Acceptance, Grandiosity, Disappointment, and Instability). The SEM data for each follows.

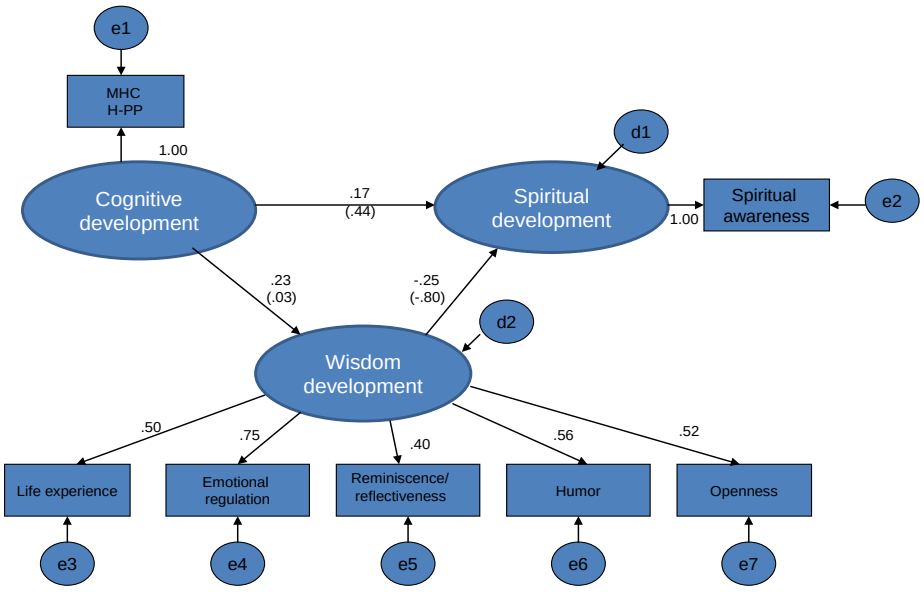


Figure 4.2. Path Diagram with Regression Weights

The standardized regression weights for Spiritual Awareness as single manifest variable for spiritual development are shown in Figure 4.2. The unstandardized coefficients for the factors are in parentheses. This model fit the data well: Satorra-Bentler χ^2 (13, N = 133) = 13.76, p = .39, CFI = .99, TLI = .98, RMSEA = .01. Increased spiritual development, limited to contemplative awareness, was predicted by greater cognitive development (standardized coefficient = .17 p = .05) A decrease in spiritual development was predicted by an increase in wisdom development (standardized coefficient = -.25, p = .02). An increase in cognitive development predicted an increase in wisdom development (standardized coefficient = .03, p = .74), but the relationship was not significant. “Standardized path coefficients with absolute values less than .10 may

indicate a ‘small’ effect; values around .30, a ‘medium’ effect; and those greater than .50, a ‘large’ effect” (Kline, 1998, p. 118).

The other four SAI subscales achieved varying degrees of model fit, but none attained significance.

(1) Realistic Acceptance: Satorra-Bentler χ^2 (13, N = 133) = 12.60, p = .48, CFI = 1.00, TLI = 1.01, RMSEA = .00. Increased cognitive development did not significantly predict an increase in wisdom development (standardized coefficient = .03, p = .79), an increase in wisdom development did not significantly predict a decrease in spiritual development (standardized coefficient = -.05, p = .62), and an increase in cognitive development did not significantly predict a decrease in spiritual development (standardized coefficient = -.13, p = .12).

(2) Grandiosity: Satorra-Bentler χ^2 (13, N = 133) = 9.23, p = .70, CFI = 1.00, TLI = 1.09, RMSEA = .00. An increase in cognitive development did not significantly predict an increase in wisdom development (standardized coefficient = .03, p = .80), an increase in wisdom development did not significantly predict a decrease in spiritual development (standardized coefficient = -.16, p = .12), and an increase in cognitive development did not significantly predict a decrease in spiritual development (standardized coefficient = -.03, p = .76).

(3) Disappointment: Satorra-Bentler χ^2 (13, N = 133) = 17.79, p = .17, CFI = .94, TLI = .87, RMSEA = .03. An increase in cognitive development did not significantly predict an increase in wisdom development (standardized coefficient = .03, p = .79), an increase in wisdom development did not significantly predict a decrease in spiritual development (standardized coefficient = -.07, p = .52), and an increase in cognitive development did

not significantly predict a decrease in spiritual development (standardized coefficient = -.09, p = .31).

(4) Instability: Satorra-Bentler χ^2 (13, N = 133) = 9.54, p = .73, CFI = 1.00, TLI = 1.10, RMSEA = .00. An increase in cognitive development did not significantly predict an increase in wisdom development (standardized coefficient = .03, p = .79) an increase in wisdom development did not significantly predict an increase in spiritual development (standardized coefficient = .10, p = .36), and an increase in cognitive development did not significantly predict a decrease in spiritual development (standardized coefficient = -.01, p = .92).

Theoretically, as noted in Chapter 2, Sa and the four developmental levels (Realistic Acceptance; non-Grandiosity; non-Disappointment with God; and non-Instability in relationship with God constitute in combination a way to estimate level of spiritual development (Hall & Edwards, 1996, 2002; Hall, Reise, & Haviland, 2007). This study using structural equation modeling was able to generate correlations among spiritual, cognitive, and wisdom development measures, only by considering each spiritual development level independently. The only spiritual development measure that attained significance was Spiritual Awareness—contemplative awareness—which spans the four spiritual development levels, on which individuals at any of the developmental levels might score anywhere on a continuum.

Direct effects. The following is based on structural equation modeling using contemplative awareness (Spiritual Awareness) as manifest variable for the factor spiritual development. Increased spiritual development was significantly predicted by a higher level of cognitive development (standardized coefficient = .17, p = .05). Using

Spiritual Awareness alone for spiritual development, this study's first hypothesis was supported. There is a small significant correlation between cognitive and spiritual development, with higher cognitive development significantly positively correlated with higher spiritual development (standardized total effects = .16, p = .05). Using the four developmental variables Realistic Acceptance, Grandiosity, Disappointment, and Instability, the first hypothesis was not supported. There was not a significant correlation between cognitive and spiritual development measured by these subscales.

Using Spiritual Awareness as manifest variable for spiritual development, higher cognitive development was positively correlated with an increase in wisdom development (standardized direct effect = .03, p = .74); standardized total effects = .03, a small effect) but the correlation was not significant.

Indirect effects. Wisdom development was hypothesized to be a mediating variable between cognitive and spiritual development. Higher wisdom development was significantly negatively correlated with higher spiritual development (standardized indirect effects = .00; standardized total effects = -.25). An increase in wisdom development associated with decrease in spiritual development, understood as contemplative awareness of God.

Considering squared multiple correlations, level of cognitive development accounted for only .1% of the variance in wisdom development. Nine percent (9%--the squared multiple correlation) of the variance in spiritual development (Spiritual Awareness) was accounted for by cognitive development and wisdom development.

Table 5. Means, Standard Deviations, and Correlations between Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. MHC H-PP	.28	.41	---									
2. Life Experience	4.79	.71	-.04	---								
3. Emotional Regulation	4.42	.72	.10	.35**	---							
4. Reminiscence/ Reflectiveness	4.64	.78	-.08	.20*	.31**	---						
5. Humor	4.68	.71	-.05	.34**	.41**	.26**	---					
6. Openness	4.49	.67	.03	.29**	.40**	.11	.26**	---				
7. Spiritual Awareness	2.57	1.09	.16	-.03	-.20*	-.21*	-.08	-.17	---			
8. Realistic Acceptance	2.05	1.53	-.14	.08	-.03	.03	-.10	-.19	.08	---		
9. Grandiosity	.78	.21	-.03	-.06	-.12	-.15	-.13	-.02	.00	-.26**	---	
10. Disappointment	.29	.21	-.09	.13	-.06	-.05	-.18*	.00	.15	.75**	-.16	---
11. Instability	.67	.23	-.01	.06	.06	.12	.06	-.01	-.19*	-.04	.07	-.09

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Hypothesis One

H_1: There will be a significant relationship in adults between cognitive development as measured by the Model of Hierarchical Complexity Helper-Person Problem and spiritual development as measured by the Spiritual Assessment Inventory.

Hypothesis One (H_1) that there will be a significant relationship in adults between cognitive development as measured by the Model of Hierarchical Complexity Helper-Person Problem and spiritual development as measured by the Spiritual Assessment Inventory, was supported only when the single SAI subtest for contemplative awareness of God (Spiritual Awareness) was the manifest variable for the factor spiritual development. When (a) all five SAI subtests together measured spiritual development, and (b) when each of the developmental SAI subtests (Realistic Acceptance, Grandiosity, Disappointment, and Instability) independently measured spiritual development, the hypothesis was not supported.

Hypothesis Two

H_2: Level of wisdom development as measured by the Self-Assessed Wisdom Scale will mediate the impact of cognitive on spiritual development.

The standardized direct effect of cognitive development on wisdom (.03) found wisdom development expected to increase .03 of a standard deviation given one full standard deviation increase in cognitive development. This correlation was not significant (p = .74).

The standardized direct effect of wisdom development on spiritual development (-.25) found spiritual development expected to decrease .25 of a standard deviation given one full standard deviation increase in wisdom development. This correlation was significant (p = .02).

The standardized direct effect of cognitive development on spiritual development (.17) found spiritual development expected to increase .17 of a standard deviation given one full standard deviation increase in cognitive development. This correlation was significant (p = .05). Interestingly, Loevinger (1976) referred to cognitive development as a "pacer," necessary but not sufficient to represent the broader domain of ego development (Cohn & Westenberg, 2004).

Since mediation demands that correlations among all three constructs be significant (Hair et al., 2006), and only the correlations between wisdom and spiritual, and between cognitive and spiritual, but not between cognitive and wisdom, were significant, wisdom development cannot be considered a mediating variable.

The relationship between cognitive development and wisdom development was non-significant. There was a significant relationship between cognitive development and

spiritual awareness. The negative impact of wisdom development on spiritual development—as wisdom development increases, spiritual development decreases—is surprising. This result might be due to a sample size relatively small for structural equation modeling and/or to nonnormal distribution of some of the subscales. (In multivariate analysis) the complexity of the relationships . . . makes potential distortions and biases more potent when assumptions (such as normality) are violated" (Hair et al., p. 79). The researcher must also consider the effects of sample size . . . in that larger sample sizes *reduce* the detrimental effects of nonnormality" (Hair et al., p. 80). The final SEM model did not use nonnormally distributed subscales, but some demographic dimensions of the sample were nonnormally distributed. Age had a strong positive skew (*z* skewness = 4.85) toward younger participants. And education was negatively skewed (*z* skewness = -1.66)—indicating more highly educated participants. In a future study, including age and education as contributing indicators for wisdom development, or using a less age-and-education-skewed sample might result in a less counterintuitive relationship between wisdom and spiritual development.

Hypothesis Two, that the level of wisdom development as measured by the Self-Assessed Wisdom Scale mediates the impact of cognitive on spiritual development, was not supported.

Hypothesis Three

To address this hypothesis, participants' level of cognitive development was derived from their scores on the MHC Helper-Person Problem. Level of spiritual development was computed from their means on the one SAI subscale—Spiritual Awareness (contemplative awareness of God)—that with structural equation modeling

successfully converged and achieved model fit. Level of wisdom development was computed from the mean of the five SAWS subscales. All measurements included deletion of one Mahalanobis distance outlier case.

$H3_a$: There will be a significant difference between female and male participants on the cognitive development scale, with one Mahalanobis outlier distance case deleted (MHC H-PP); spiritual development scale as represented by contemplative awareness, case deleted (Spiritual Awareness); and overall wisdom development (mean of five subscales), case deleted.

There were 35 male participants (26%) in the study, and 98 women (74%). Means of scores for each of the three indicators for latent constructs cognitive, wisdom, and spiritual development were assessed for normality with PASW, and were found to be normally distributed.

An independent-samples *t*-test was conducted to compare the means of cognitive development (MHC H-PP) scores for men (1) and women (2). There was no significant difference in scores for men (M = .24, SD = .37) and women (M = .29, SD = .43; t (132)= -.69, p = .49). The magnitude of the differences in the means was small (η^2 = .01).

An independent-samples *t*-test was conducted to compare the means of spiritual development (Spiritual Awareness) scores for men (1) and women (2). There was no significant difference in scores for men (M = 2.50, SD = 1.15) and women (M = 2.60, SD 1.08; t (132) = -.47, p = .49. The magnitude of the differences in the means was very small (η^2 = .007).

An independent-samples *t*-test was conducted to compare the means of wisdom development (WDcd) scores for men (1) and women (2). There was no significant

difference in scores for men (M = 4.60, SD = .38) and women (M = 4.61, SD = .50; t (132 = -1.09, p = .09). The magnitude of the differences in the means was very small (η^2 = .001).

For manifest variables related to the three latent constructs cognitive, wisdom, and spiritual development, there were no significant differences in scores for men and women. Hypothesis 3_a was not supported. There was not a significant difference between female and male participants on the cognitive development score, spiritual development scores (Spiritual Awareness), and overall wisdom development (mean of five subscales) scores.

H3b: There will be a significant difference in respect to participant age on the cognitive development scale, with one Mahalanobis outlier distance case deleted (MHC H-PP); spiritual development scale as represented by contemplative awareness, case deleted (Spiritual Awarness); and overall wisdom development (mean of five subscales), case deleted from each subscale.

The relationship between participant age and level of cognitive development (as measured by the MHC H-PP, case deleted) was explored using Pearson product-moment correlation coefficient. With preliminary analyses, the age variable was found to violate the assumption of normality (z skewness of 4.81). Inverse transformation was conducted, resulting in a z skewness of .25).There was a very small, negative, non-significant correlation between the two variables (r = -.03, n = 132, p = .77), with higher level of cognitive development associated with lower age. “Many authors suggest that statistical significance should be reported but ignored, and the focus should be directed at the amount of shared variance” (Pallant, 2005, p.127). Age helped to explain .06%

(coefficient of determination [r^2] = .0006) of the variance in level of cognitive development.

The relationship between participant age and level of wisdom development (as measured by the participants' average of five subscale responses on the SAWS, case deleted) was investigated using Pearson product-moment correlation coefficient. Age was transformed (inverse) to approximate normality. There was a very small, negative, non-significant correlation between the two variables (r = -.01, n = 132, p = .87), with higher level of wisdom development associated with lower age. Age helped to explain .02% (coefficient of determination [r^2] = .0002) of the variance in level of wisdom development.

The relationship between participant age and level of spiritual development (as measured by the participants' scores on the SAI contemplative awareness subscale, case deleted) was investigated using Pearson product-moment correlation coefficient. Age was transformed (inverse) to approximate normality. There was a small, positive, non-significant correlation between the two variables (r = .12, n = 132, p = .16), with higher level of spiritual development associated with higher age. Age helped to explain 2% (coefficient of determination [r^2] = .02) of the variance in level of spiritual development.

Hypothesis 3_b that there will be a significant difference in respect to participant age on the cognitive development scale, spiritual development as measured by contemplative awareness, and overall wisdom development (mean of five subscales)—case deleted from measurement of each factor—was not supported. There was no significant difference in respect to participant age on the three scales. The relationships were negative between age and cognitive development and age and wisdom development,

and positive between age and spiritual development. Sizes of the relationships were small.

$H3_c$: There will be a significant difference in respect to participant education level on the cognitive development scale, spiritual development as measured by contemplative awareness, and overall wisdom development (mean of five subscales)—case deleted from measurement of each factor.

A one-way ANOVA was performed to examine the impact of education level on levels of cognitive development, as measured by the MHC H-PP, case deleted. Rasch analysis-derived scores constituted participant scores for level of cognitive development. Subjects were divided into three groups according to their education level (Group 1: High school diploma [$N = 32$]; Group 2: Associate and Bachelor degrees [$N = 55$]; and Group 3: Postgraduate degrees [$N = 44$]). Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. There was not a statistically significant difference at the $p < .05$ level in Rasch scores for the three education-level groups [$F(2,130) = 1.45$, $p = .24$]. The effect size, calculated using η^2 (.02), was small.

A one-way ANOVA was performed to investigate the impact of education level on levels of wisdom development, as measured by the mean of scores on subscales of the SAWS, case deleted. Subjects were divided into three education-level groups as noted above. There was not a significant difference at the $p < .05$ level in wisdom development scores for the three education-level groups [$F(2, 131) = .79$, $p = .46$]. The effect size, calculated using η^2 (.01) was small.

A one-way ANOVA was performed to investigate the impact of education level on levels of spiritual development, as represented by the contemplative awareness subscale, case deleted. Subjects were divided into three education-level groups as noted above. There was not a statistically significant difference at the $p < .05$ level in spiritual development scores for the three education-level groups [$F(2, 131) = 1.39$, $p = .25$]. The effect size, calculated using η^2 (.02), was small.

Hypothesis 3_c that there will be a significant difference in respect to participant education level on the cognitive development scale, spiritual development as measured by contemplative awareness, and overall (mean of five subscales) wisdom development—case deleted from each factor measurement—was not supported. The impact of level of education on levels of cognitive development, wisdom development, and spiritual development was not statistically significant, and effect sizes were small.

$H3_d$: There will be a significant difference in respect to participant socioeconomic level on the cognitive development scale, spiritual development as measured by the contemplative awareness subscale, and overall wisdom development (mean of five subscales)—case deleted from each factor measurement.

An independent-samples *t*-test was conducted to explore the impact of socioeconomic level on levels of cognitive development, as measured by the MHC Helper-Person Problem, case deleted. Rasch analysis-derived scores constituted participant scores for level of cognitive development. Subjects were divided into two groups according to their socioeconomic level: Group 1: skilled occupation [$N = 47$] and Group 2: professional [$N = 77$]). Since few participants reported unskilled or semi-skilled occupations ($N = 6$), they were not included in the analysis. For participants who were

students, a master's degree and/or Group 2-level father/mother/spouse occupation/education associated them with Group 2. There was no significant difference in level of cognitive development for skilled (M = .32, SD = .33) and professional (M = .25, SD = .46) occupations. The effect size, calculated using η^2 (.005), was very small.

An independent-samples *t*-test was conducted to explore the impact of socioeconomic level on levels of wisdom development, as measured by the mean of five SAWS subscales, case deleted. Subjects were divided into two groups according to their socioeconomic level: Group 1: skilled occupation [N = 47] and Group 2: professional [N =77]). Since few participants reported unskilled or semi-skilled occupations (N = 6), they were not included in the analysis. For participants who were students, a master's degree and/or Group 2-level father/mother/spouse occupation/education associated them with Group 2. There was no significant difference in level of wisdom development for skilled (M = 4.56, SD = .41) and professional (M = 4.62, SD = .50) occupations. The effect size, calculated using η^2 (.01), was small.

An independent-samples *t*-test was conducted to explore the impact of socioeconomic level on levels of spiritual development, as measured by the SAI contemplative awareness subscale, case deleted. Subjects were divided into two groups according to their socioeconomic level: Group 1: skilled occupation [N = 47] and Group 2: professional [N =77]). Since few participants reported unskilled or semi-skilled occupations (N = 6), they were not included in the analysis. For participants who were students, a master's degree and/or Group 2-level father/mother/spouse occupation/ education associated them with Group 2. There was no significant difference in level of

spiritual development for skilled (*M* = 2.79, *SD* = 1.12) and professional (*M* = 2.47, *SD* = 1.07) occupations. The effect size, calculated using η^2 (.02), was small.

Hypothesis 3_d that there will be a significant difference in respect to participant socioeconomic level on the cognitive development scale, overall (average of five subscales) wisdom development (average of five subscales), and spiritual development as measured by contemplative awareness—case deleted from each factor measurement—was not supported. The impact of socioeconomic level on cognitive development, wisdom development, and spiritual development was not statistically significant, and effect sizes were small.

$H3_e$: There will be a significant difference in respect to participant religious denomination on the cognitive development scale, spiritual development as measured by the contemplative awareness subscale, and overall wisdom development (mean of five subscales)—case deleted from each factor measurement.

A one-way ANOVA was performed to explore the impact of religious affiliation, or lack thereof, on levels of cognitive development, as measured by the MHC Helper-Person Problem, case deleted. Rasch analysis-derived scores constituted participant scores for level of cognitive development. Subjects were divided into three groups according to their religious affiliation or disaffiliation (Group 1: Catholic [*N* = 42]; Group 2: Protestant [*N* = 45]; Group 3: [N = 35]: Agnostic [*N* = 3], Spiritual, not religious [*N* = 19], and Neither religious nor spiritual [*N* = 13]). Since few participants reported being Orthodox [*N* = 3], Jewish [*N* = 2], or Other [*N* = 4], they were not incorporated in the analysis. There was not a statistically significant difference at the $p < .05$ level in cognitive development scores for the three religious affiliation/disaffiliation groups [*F*(2

121) = 1.34, $p = .27$]. The effect size, calculated using η^2 (.02), was small. Of interest in this study was that a large proportion—27%--of participants self-identified as agnostic, spiritual but not religious, or neither spiritual nor religious. Thirteen percent self-identified as atheist. Since agnostics and spiritual-but-not-religious individuals may or may not believe in a personal God, the proportion of the sample likely not to endorse SA items was between 13% and 27%.

A one-way ANOVA was performed to explore the impact of religious affiliation, or lack thereof, on levels of wisdom development, as measured by the mean of scores on subscales of the SAWS, case deleted. Subjects were divided into three groups described above according to their religious affiliation or disaffiliation. There was not a statistically significant difference at the $p < .05$ level in level of wisdom development for the three religious affiliation/disaffiliation groups [$F(2, 121) = 1.20$, $p = .53$]. There was a very small effect size, calculated using η^2 (.009).

A one-way ANOVA was performed to explore the impact of religious affiliation, or lack thereof, on levels of spiritual development, as measured by the contemplative awareness subscale, case deleted. Subjects were divided into three groups described above according to their religious affiliation or disaffiliation. There was not a statistically significant difference at the $p < .05$ level in spiritual development scores for the three religious affiliation/disaffiliation groups [$F(2, 121) = .63$, $p = .88$]. There was a small effect size (.01), calculated using η^2.

Hypothesis 3_e that there will be a significant difference in respect to participant religious affiliation/disaffiliation on the cognitive development scale, overall wisdom development (mean of five subscales), and spiritual development as measured by the

contemplative awareness subscale—case deleted from each factor measurement—was not supported. The impact of religious affiliation/disaffiliation on cognitive development, wisdom development, and spiritual development as measured in this study, was not statistically significant, and effect sizes were small. Overall, Hypothesis 3, that demographic factors—gender, age, education level, socioeconomic status, religious affiliation—will be significantly associated with level of cognitive, spiritual, or wisdom development, was not supported. Effect sizes were small. Chapter 5 will discuss the results of this study.

Chapter 5

Discussion

This chapter will consider the implications of the results provided in Chapter 4. Findings of the analyses will be discussed in relation to their extending or diverging from previous literature. Following will be implications of the study for clinical and research purposes. Finally, future directions for ongoing study will be suggested. Findings of this study indicate that Spiritual Awareness as determined by the Spiritual Assessment Inventory shows significant correlation with cognitive and wisdom development.

Discussion of the Results of the Hypotheses

Hypothesis One. *H_1: There will be a significant relationship in adults between cognitive development as measured by the Model of Hierarchical Complexity Helper-Person Problem and spiritual development as measured by the Spiritual Assessment Inventory.*

As noted in Chapter 2, four of the five SAI subscales (Realistic Acceptance, Grandiosity, Disappointment, and Instability) each represent a level of spiritual development (highest to lowest). Since the sample for this study consisted in undergraduate and graduate students and alumni, most participants would be expected to score at the Realistic Acceptance level (characteristic of adulthood), fewer at Grandiosity

(late adolescent and young adulthood), fewer still at Disappointment (adolescence), and hardly any at Instability (childhood). These stages recur to some extent and to varying degrees also in individuals with personality or psychological issues, or attachment/ relational deficits (Hall, 2004). The SAI subscale Spiritual Awareness is a measure of overarching contemplative awareness, on which individuals at any of the four developmental levels might score anywhere on a continuum. Non-convergence of the data using structural equation modeling prevented assessment of spiritual developmental levels. Future research might attempt to respond to this hypothesis with different sample demographics, or with a different statistical method.

This study asked whether the later stages of adult cognitive development, with greater appreciation for nuance, alternatives, paradox, and incongruity associates, as it seems to, with higher spiritual development. The study found that, higher cognitive development does show a positive correlation of small effect size with Spiritual Awareness.

Hypothesis Two. *H_2: Level of wisdom development as measured by the Self-Assessed Wisdom Scale will mediate the relationship between cognitive and spiritual development.*

The standardized direct effect of cognitive development on spiritual development (.17) was significant (p = .05). The standardized direct effect of cognitive development on wisdom (.03) was not significant (p = .74). The standardized direct effect of wisdom development on spiritual development (-.25) was significant (p = .02). Since mediation demands that correlations among all three constructs be significant (Hair et al., 2006) and only the correlations between wisdom and spiritual, and between cognitive and

spiritual, but not between cognitive and wisdom, were significant, wisdom development cannot be considered a mediating variable.

Hypothesis Two—that the level of wisdom development as measured by the Self-Assessed Wisdom Scale will mediate the relationship between cognitive and spiritual development—was not supported.

Wisdom, understood as a synthesis of cognitive, affective, and reflective elements (Clayton & Barren, 1980; Ardelt, 2003), a personal capacity to comprehend what happens intra- and interpersonally (Webster, 2007) would be expected to correlate with cognitive development and to increase with age. Wisdom development was not found to increase significantly with higher cognitive development.

Hypothesis Three. *Demographic factors—gender, age, education level, socioeconomic status, religious denomination—will be significantly associated with level of cognitive, spiritual, or wisdom development.*

To address this hypothesis, participants' level of cognitive development was derived from their scores on the MHC Helper-Person Problem. Level of spiritual development was computed from their score on only one of the SAI subscales: Spiritual Awareness of God. Level of wisdom development was computed from participants' scores on the five SAWS subscales (dimensions of wisdom).

$H3_a$: There will be a significant difference between female and male participants on the cognitive development scale, overall spiritual development (mean of five subscales), and overall (mean of five subscales) wisdom development.

$H3_b$: There will be a significant difference in respect to participant age on the cognitive development scale, overall spiritual development (mean of five subscales), and overall (mean of five subscales) wisdom development.

$H3_c$: There will be a significant difference in respect to participant education level on the cognitive development scale, overall spiritual development (mean of five subscales), and overall (mean of five subscales) wisdom development.

$H3_d$: There will be a significant difference in respect to participant socioeconomic level on the cognitive development scale, overall spiritual development (mean of five subscales), and overall (mean of five subscales) wisdom development.

$H3_e$: There will be a significant difference in respect to participant religious denomination on the cognitive development scale, overall spiritual development (mean of five subscales), and overall (mean of five subscales) wisdom development.

Overall, Hypothesis 3, that demographic factors—gender, age, education level, socioeconomic status, religious affiliation—will be significantly associated with level of cognitive, spiritual, or wisdom development, was not supported. Effect sizes were small. Of the three hypotheses, only the first—that there will be a significant relationship between cognitive and spiritual development—was supported, and only with Spiritual Awareness. Higher cognitive development correlated significantly with spiritual awareness of divine presence, with small effect size. Higher wisdom development correlated significantly with lower spiritual awareness of divine presence, with moderate effect size.

As we saw with Hypothesis 2 and wisdom's failure to correlate significantly with cognitive development, wisdom development also did not correlate significantly with

increase in age. The significant negative correlation between wisdom development and Spiritual Awareness was surprising. Individuals self-reporting higher in positive integration of adverse Life Experience, Emotional Regulation, Reminiscence and Reflection, Humor, and Openness, were less likely to endorse items indicating consciousness of a divine presence. The SAWS wisdom scale was neither faith-based nor spiritually oriented. It is not clear what might account for a significant negative correlation between wisdom development and Spiritual Awareness. Future research on this topic might discover why the correlation was negative.

Relationship of the Results to Previous Theory or Research

Hypothesis One. Prior literature does not answer the question of whether level of cognitive development might correlate with level of spiritual development. Participnts' level of cognitive complexity assessed with the moral MHC Helper-Person Problem ranged between MHC stages 8 to 12 (concrete, abstract, formal, systematic, and metasystematic), the typical range for undergraduate and graduate students. To recall, Armon (1998) found that "no subject attained moral Stage Four (conventional) before the age of 24, nor moral Stage Five before the age of 35" (p.6). Moral Stage Four corresponds to MHC stages 10 (formal) and 11 (systematic). For participants to score a moral Stage Six—impossible in this study—would require a more complex reasoning context of interindividual, societal dialogue with interdependent discourse and consensus based on member contributions. The highest score possible on the Helper-Person Problem (12, metasystematic) corresponds to moral Stage Five (postconventional, social contract). The Helper-Person Problem range was appropriate for this study's population sample.

The Model of Hierarchical Complexity, particularly at systematic, metasystematic, and stages beyond, is effective for studying human, moral, and religious development (Day, 2008).

> The Model is useful in teasing out (a) moral judgment—religious judgment relationships, (b) relationships among structure, stage, and context, and what contributes to, or inhibits, reasoning at maximal capacity about religious issues, and (c) moral problem-solving involving religious commitment (Day, 2008, p. 463).

This study's significant positive correlation between cognitive and sa support the neuroscientific findings of Azari et al. (2001). In ambiguous situations, such as discerning whether one experiences the presence of God, religious experience involved activation of cognitive attributional pathways. Research finds religious experience that elicits and articulates belief to be more is cognitive than emotional (Azari & Birnbacher, 2004). Studies show a close connection between cognitive and emotional systems (Eich, 2000) that includes causal explanation/interpretation, assignment of what is real (Newberg et al., 2001), and evaluation or appraisal (Ochsner & Barrett, 2001)—all related to cognitive-affective inter-influence on spiritual experience (Hall, 2004).

Cognitive development as significantly correlated with Spiritual Awareness might be explained by conversion theory, articulated by Lonergan (1972) and extended by Gelpi (1998). Gelpi defines conversion as "the decision to take responsibility for the development of some aspect of one's own experience" (Sperry, 2001, p. 45). With initial conversion one takes responsibility for a life dimension such as intellectual conversion. Ongoing conversion involves interaction among other dimensions of experience as

well—affective, moral, somatic, sociopolitical, and religious. Ongoing conversion involves commitment to integral change throughout life (Sperry, 2001).

Intellectual conversion might be understood in the sense of Fowler's (1982) stages of faith—"faith" here understood as meaning-making rather than necessarily religious. Beyond mere knowledge or social conformity in one's beliefs, intellectual conversion would minimally require a synthetic-conventional stage of faith (as meaning making). Ongoing conversion would mean attainment of at least the individuative-reflective meaning-making stage (Gelpi, 1993; Sperry, 2001). Without faith in a personal God, a developing spirituality might be based in humanism or values such as integrity, responsibility, or altruism, but included would not be the submission to a personal God to which the work of Han et al. (2008) refers.

This study's significant correlation between cognitive development and spiritual awareness might be attributable to the close connection between cognitive development and spiritual development to which a number of theorists allude. Regarding cognitive development, higher MHC stages are thought to translate to increase in perspective-taking, a wider view of interdependent reality, and empathic consideration of alternate perspectives (i.e., Commons & Bresette, 2006). This research supports the contention of Hall, Brokaw, Edwards, & Pike (1998) that therapists attending to clients' spirituality in psychotherapy find an association between quality of relationship with God and relational maturity. This current study found a significant positive correlation between awareness of the presence of God and higher level of cognitive development. The latter would suggest more advanced empathic perspective taking, or higher relational maturity. The significant positive correlation offers empirical support for a cognitive development congruence with

Spiritual Awareness. It would not be accurate to conclude the converse. Individuals lacking a theist perspective might demonstrate high levels of cognitive development not associated with Spiritual Awareness.

This study's finding of a significant negative correlation between wisdom development and spiritual development, so that as wisdom development increases, spiritual awareness of divine presence decreases, may point to this study's demographic composition regarding faith. Recent polls find that "92% of Americans can be classified in a group that tilts toward the existence of God," with "87% basic believers, only 3% hard-core atheists, and 4% agnostics, leaning toward a belief that God does not exist, but not sure" (Gallup, 2006). Twenty-seven percent of this study's sample disclaimed a specifically faith-oriented self-description, with agnostics and spiritual-but-not-religious perhaps open to the possibility. Thirteen percent self-identified as atheist. So the sample included between 13% and 27% of participants not likely to endorse Spiritual Awareness items on awareness of a divine presence. Only 8% of the current U.S. population fit the latter description (Gallup, 2006). This study's sample was thus not representative of the U.S. population, but tended to 1.5 to 3.5 times higher non-religiousness.

The perspective on wisdom in the SAWS is non-faith-based. Only two SAWS items arguably might suggest a transcendent perspective: Item 35: "I am very curious about other religious and/or philosophical systems" and Item 40: "I've often wondered about life and what lies beyond." It appears that participants answered the SAWS items without reference to faith. They disproportionately self-described as non-faith-oriented. As a group, the more they endorsed secular wisdom development, the less they endorsed a sense of divine presence. Participants were skewed toward younger age, higher

socioeconomic status as measured by occupation, and higher level of education. A recent Gallup poll (2,800 interviews from October 2005 to May 2006) found that younger people are equally as likely as older to claim certainty that God exists. However, younger individuals are less likely to claim religion as important in their daily life, and more ready to report no religion at all (Gallup, 2006). This study's sample was skewed toward higher educational attainment (76% had a college degree, and 34% a post-graduate degree), compared to the general U.S. population (25% college degree, and 5% a post-graduate degree, 2000) (Censuscope, 2011). The study's sample was skewed toward high socioeconomic status (36% in skilled occupations, and 59% professionals), compared to the general U.S. population (17% in skilled occupations, and 17% professionals, 2000) (Censuscope, 2011).

The recent Gallup poll (2006) found an inverse relationship between levels of education and income and belief in God. Generally speaking, Americans who have attained higher levels of education and who have higher household incomes are less likely to be certain that God exists than those who are on the other end of the socioeconomic spectrum (2006). This may be attributable to a higher degree of skepticism that often accompanies more educational training, to agree only cautiously with any factual statement. And those with less favorable life circumstances may be more inclined to belief in a beneficent God and a better life hereafter (Gallup, 2006).

It would seem reasonable that participants responded to the non-faith-based wisdom scale (SAWS) from a secular perspective. Those with faith in a personal God, particularly Christians (with whom in mind the SAI was developed) might have perceived in the SAWS a "this-worldly wisdom" that faith would transcend (l Corinthians

1: 18-31): The sample's large percentage of non-faith-oriented participants, predominantly younger, more educated, and more socioeconomically prosperous, might have something to do with this study's results showing with increase in secular wisdom, a significant decrease in Spiritual Awareness of divine presence. Future research will need to explain the negative correlation.

Hypothesis Two. The current study seems to contradict the findings of Wink and Dillon's (2002) longitudinal research where, particularly for women, experiences of adversity in early adulthood promoted spiritual development later in life. This occurred only when adverse life experience was paired with cognitive commitment, leading to the conclusion that spiritual growth is complex and multifaceted (Wulff, 1993). Compared with this study, Wink and Dillon's study involved a larger sample (233, aged 31-70), was longitudinal (over 40 years), and was more representative of the U.S. population (where approximately 95% believe in a personal God) (Gallup, 2003, 2005; Richards & Bergin, 2005).

The current study with a positive but non-significant cognitive-wisdom correlation appears to support the results of Bauer, McAdams, and Sakaeda's (2005) research which found that happy/wise people tend to frame integrative memories (as in the SAWS Reminiscence/Reflectiveness subscale) as opportunities for social cognitive growth. Mascaro, Rosen, and Morey (2004) found a positive association between wisdom's emotional regulation and cognitive spiritual meaning-making. Both studies appear to draw conclusions about a strong cognitive-wisdom association. This current study found a positive though non-significant cognitive-wisdom correlation.

Hypothesis Three. This study analyzed sample demographics as dimensions of the cognitive development—spiritual awareness correlation research. None of the sample demographic variables were found to significantly correlate with higher cognitive development, wisdom development, or spiritual awareness. Confirmed were findings by Armon and Dawson's (1997) longitudinal study that cognitive (moral) reasoning stage correlates with educational attainment, and that neither age nor gender differed significantly regarding cognitive development. In this current study age was positively skewed, with the preponderance of participants younger in age. The age variable violating normality (*z* skewness of 4.81), had to be inverse transformed, resulting in a *z* skewness of .25. The relationships were non-significant--negative between age and cognitive development, and age and wisdom development, and positive between age and spiritual development. Effect sizes were small.

A lack of correlation between wisdom and age, though culturally counterintuitive, seems generally consistent with Webster's (2003) characterization of the wise person. Undergraduate and graduate students and alumni, predominantly younger in the sample rather than older, might be expected to show substantial emotional regulation, humor, and openness, particularly since they are somewhat or highly educated. Increasing age would not seem necessary in order to register increase in these qualities. A wisdom dimension that would seem to require relatively advanced age is integration of adverse life experience; one would need to have experienced some degree of serious adversity. A second would be emotional regulation, looking back over events and patterns of the past. One would need to have lived sufficiently long to have enough past to reminisce and reflect about. Webster (2003) notes that one does not necessarily become wise simply by

virtue of chronological longevity, without having meaningfully integrated negative life experience into one's identity, allowing an enriched generativity to shape ongoing decision making. This study did not find a significant correlation between increasing age and increasing cognitive, wisdom, or spiritual development.

Regarding gender and moral development as envisioned by Kohlberg, Gilligan's critique—that women are handicapped in his developmental schema by their orientation to care rather than to justice (as allegedly, males are) has not been supported by current research (Berger, 2005). Moral reasoning has been found to be impacted more by cultural than by moral influences (Walker, 1988). This study did not find significant gender differences regarding cognitive, wisdom, or spiritual development.

Implications for Practice and Future Research

Eighty percent of clients prefer to incorporate spirituality into treatment (Knox, Catlin, Casper, & Schlosser, 2005; Saunders, Miller, & Bright, 2010), and most therapists incorporate spiritual interventions into mainstream therapeutic practice (Richards & Bergin, 2004, 2005; Sperry & Shafranske, 2005; Worthington, Kurusu, McCullough, & Sandage, 1996). This current research supports the value of clinician attention to assessing client cognitive, wisdom, and spiritual development, so that therapeutic interventions might include these dimensions. And the research suggests that it may be important to evaluate the appropriateness of instruments to assess and assist clients regarding spiritual development. The MHC Helper-Person Problem has been found in previous studies (see Commons & Pekkar, 2008), as well as this one, to be an effective brief instrument for assessing level of cognitive development. Any number of other MHC dilemmas might also be used to assess cognitive development in a variety of domains

(see www.dareassociation.org). For scoring, Rasch analysis is needed, using Winsteps or other Rasch software (see www.winsteps/facets.com).

For assessing wisdom development, the SAWS was found in this study, as in previous research (Webster, 1996, 2003) to be a relatively brief, easy-to-administer-and-score paper-and-pencil scale. Results give the clinician a client profile for five wisdom dimensions. Intervention can then be shaped to reinforce client strengths and repair deficits. Assessment of spiritual development with the SAI has been found in this study to be complex. Once clinicians assess clients' functional level of cognitive, wisdom, and spiritual development, they might include intervention strategies to reinforce client strengths and correct deficiencies.

Literature supports the possibility of effectively assisting clients, individually or in groups, to advance developmentally. There are interventions that help clients attain a higher level of cognitive development. Their qualitative progress in perspective-taking can persist as a more advanced cognitive level. Specific methods, for example, in education, organizational contexts, or research, can promote adult development to more complex stages (Torbert, 1994; Foster & Torbert, 2004; Torbert & Associates, 2004; Rooke & Torbert, 2005; Manners & Durkin, 2004). Five qualitative studies discussed in the Chapter 2 literature review were based on a process of developmental action inquiry (Ross, 2006) that can prompt individual and group progress through successive stages. Armon's classroom mentor study (1998) supported participants' advancement in moral development regarding social justice involvement.

Developmental gains were also maintained over time. Systematic intervention, including self-reflective interaction guided by facilitators trained in the dynamics of

intellectual progress, promoted stage increase in cognitive development. Additional studies using developmental action inquiry also elicited adult cognitive stage advance (Paxton, 2003; Van Stralen-Cooper, 2003; Lamm, 2000; Wicker, 2001; Torbert, 2004). A systematic process of reflective awareness for real-time learning in action extends capacity to reexamine "assumptions, intentions, strategies, and actions in circumstances in which they arise. As these domains are applied and coordinated at the various scales from personal, to interpersonal, to organizational, to the larger world, cognitive complexity . . . increases" (p. 42). Three necessary elements for fostering adult cognitive development were: (a) a substantial amount of time for participants, (b) numerous occasions for work, self-reflective questioning, and interaction, and (c) investigators who understand well the cognitive dynamics that characterize shifts in adult development (Ross, 2006). With these components in place, clinicians working with individuals or groups in need of an expanded, more complex view of their given reality, might help them to progress.

Theory for object relations/attachment and for wisdom development might suggest interventions that would promote developmental progress. It would seem, too, that for psychotherapists who encounter clients who might benefit from spiritual development, a similar process could be effective: adequate time for the client to make a meaningful change; multiple opportunities for application, self-reflection, and interaction; and foundationally, the therapist's internalized understanding of the shifts in perspective, values, and behavior that effect higher levels of spiritual development. Since spiritual maturity in its various degrees may be understood from multiple perspectives, for this

study it is seen within object relations/attachment theory, supporting the Spiritual Assessment Inventory (Hall & Edwards, 2002).

Individuals have been found to prefer the reasoning of others in conversation according to a relative matching between their levels of cognitive complexity (Day, 2008). This includes discussion about spirituality/religion and its application to moral issues. Where in- and out-group controversy heightened by religious reference can lead to violence, understanding of the advantages of increasing cognitive complexity can facilitate instead, empathic tolerance and peace (Day, 2008).

Extant literature does not address the question of whether level of cognitive development might correlate with level of spiritual development. As we have seen above, a number of studies demonstrate that adult cognitive development can be promoted. There are interventions that elicit in individuals attainment of a higher level of cognitive perspective-taking that is durable enough to be considered their new, more advanced cognitive level. Future research along the lines of this study might encourage helping professionals to assist their clients to advance in spiritual development. The dimensions both of object relations/attachment theory and of wisdom development might inspire interventions to promote advancement in spiritual development. This study in its implications raises awareness and encourages such possibilities.

Regarding spiritual development, implicit relational knowing has been shown to continue throughout the lifespan, unconsciously forming subjective experience of interpersonal relationships (Hall, 2004, 2007). Numerous theorists note that individuals are biopsychospiritual beings (Benner, 1988, 1998; Carten, 1974; Hall & Edwards, 1996; Pingleton, 1984; Shackelford, 1978; Sperry, 1999; Moriarity, 2006). Psychological

treatment has been found while alleviating symptoms, even without explicit reference to God image, to foster a more positive, sympathetic and loving God image (Moriarity, 2006). Although this study's SEM analyses did not converge using SAI spiritual development subscales, the study did draw attention to a model of spiritual maturity that is relational and developmental in nature (Hall & Edwards, 1996; Hall, 2004). Suggestions for incorporating spirituality with developmentally oriented treatment might be found, for example, in Well-Being Therapy (WBT) or spiritually augmented cognitive behavioral therapy (SACBT) (Sperry, 2010).

Sperry (2001) offers a synopsis of six perspectives on spiritual development: character, ethical, transpersonal, self-transcendence, object relations, and conversion. He suggests principal perceptions each of seven stage models for integrating spirituality with development.

> With (1) psychosocial development, development is relational; there is a developmental sequence to the acquisition of virtues. With (2) moral development, Moral development does not necessarily produce moral actions; women's moral reasoning can differ from men's moral reasoning. With (3) faith development, belief is a process of growth in the transforming of religious meanings rather than the clinging to a particular formulation of the content of a belief or doctrine. With (4) self-development, spiritual maturity means freely surrendering oneself and risking a genuinely mutual relationship with others and God. (5) Spiritual development is a process of developing integrity, wholeness, self-responsibility, and self-transcendence. (6) Spiritual growth, depending on the definition of spirituality, may occur before, alongside, or after psychological

> development, but always requires spiritual disciplines. (7) Stages of the spiritual journey involve dismantling the false self and recovering the true self as the road map of the spiritual journey; spiritual growth requires meditation/contemplation and spiritual practices (Sperry, 2001, p. 48).

Many of the theorists listed there were included in this study; most of the others assume a specifically Christian faith perspective. Future research might build on this study using an alternate dimension of spiritual development such as one of Sperry's insights of stage models for incorporating spirituality.

Methodological Implications

The current study has implications for future research on this topic involving structural equation modeling. Prediction would be improved by the use of multiple indicators of the latent constructs. Time constraints for online participants restricted the cognitive development construct to only one measure. The three-part online instrument required about 30 minutes to complete, more time than most online participants are willing to devote. Ideally, for structural equation modeling there should be about four indicators per latent construct (Tabachnik & Fidell, 2007).

Measurement models with more than one factor typically require only two indicators per factor for identification. However, (this) may lead to problems. Such models may be more likely to be empirically underidentified than models with at least three indicators per factor. Other estimation problems such as nonconvergence of iterative estimation are more like to occur with only two indicators per factor, especially in small samples. Kenny's (1979) rule of thumb about numbers of indicators: "Two *might* be fine, three is better, four is best" (p. 143; emphasis in original)" (Kline, 1998, p. 274).

The SAWS with five subscales provided enough indicators. The SAI, also with five subscales, would have been appropriate for number of indicators, except that the four developmental subscales (with this study's data) failed to converge. As a result, the latent construct had only one indicator, Spiritual Awareness. Addition of more measurements for the constructs would require a context for testing other than online.

Commons (personal communication, August 2011) recommended revising the SAI and SAWS to make them parallel to the MHC Helper-Person Problem and scorable by Rasch analysis. This, he thought, would simplify comparison among the participant scores on the three domains, and would improve interpretability of results. Commons' suggestion was not followed for this study because the SAI and SAWS had to be incorporated verbatim as written and standardized by their authors. In future, it might be possible to develop alternate wisdom-development and spiritual-development instruments that are based in the Model of Hierarchical Complexity scoring system. Commons would be willing to guide formulation of measurement items to meet MHC criteria (personal communication, 2011). MHC-oriented measures might make research on this topic more methodologically accurate.

This study's accuracy might also be improved by using observer or informant ratings for participants responding to the wisdom development and spiritual development measures. The SAWS did not include a social desirability subscale, and the SAI's Impression Management subscale proved unworkable. In order to incorporate observer ratings, the study's methodology would need to be substantially revised.

Recommendations for Design of Future Research

Sampling improvement. As noted in Chapter 1, a larger sample with wider demographic range than represented here would increase the validity and value of this research. Assiduous attempt was made to elicit participants from large secular universities representing each of the four geographic regions of the current U.S. census for a demographically representative sample, but that plan proved impracticable. University admissions and alumni departments involve complex chains of command and policies often prohibiting communications to prospective, current, or past students. When after numerous attempts, it proved impossible to engage cooperation from admissions and alumni officials of regionally representative universities, the prospectus was revised. Eventually, the only universities to disseminate the study's survey were those that counted among their alumni, members of this study's committee. All the universities involved were in the mid-western United States. Future research on this topic might consider eliciting participants from psychology department instructors who might administer the survey to their classes. It would then be necessary to find ways to expand the sample's demographic range.

The Call for Participants was sent to about 7,500 potential participants. The final number of participants who completed all three sections of the survey was only 133. While this number was adequate for structural equation modeling, a larger sample would have yielded more adequate results. In structural equation modeling, when data diverge from normality, a higher ratio of participants to parameters is needed—generally, 15 participants for each parameter. A large sample helps reduce the impact of sampling error (Hair et al., 2006). The current study had 22 parameters to be estimated, so would have

benefited from a sample of 330. More stable solutions more likely to be replicable generally are produced by larger Samples (Hair et al., 2006). A larger number of participants, with focused researcher effort to form a stratified sample, might more closely approximate demographics of the most recent U.S. census.

A sizable proportion of the sample self-identified as lacking a faith perspective which recognizes psychological processes as associated with self-transcending spirituality related to a personal God (Benner, 1998). The SAI, as noted, is based in Christian spirituality. Its authors Hall and Edwards (2007) invited research with the SAI among non-Christian populations. This study's committee members required a broad sample drawn from secular university students and alumni in order to increase methodological/statistical accuracy. Non-Christians were invited to substitute "higher power" for the SAI's references to a personal God.

This study's sample was found to be disproportionately non-faith-oriented. As noted in Chapter 4, 27% self-identified as potentially lacking faith in a personal God (agnostic, spiritual but not religious, or neither spiritual nor religious), and 13% self-identified as atheist. Between 13 and 27% of the sample were unlikely to endorse Spiritual Awareness items on awareness of the presence of a personal God. Also, three of the sample's demographic variables—age, level of education, and socioeconomic status—were skewed away from likelihood of endorsing awareness of divine presence. As we saw in the discussion of Hypothesis 3, individuals younger in age, higher in education, and in occupations more professional than skilled, tend to be less inclined to a faith orientation. Participants' scores were generally high on the SAWS' secular-oriented wisdom. There was, in fact, a wide range and relatively many scores at the extremely low

end of Spiritual Awareness. Respondents who self-reported a significantly high degree of non-faith-oriented wisdom, failed also to a significant degree, to endorse contemplative awareness of God.

If atheist participants were removed from the sample, would the direction of the correlation between wisdom development and Spiritual Awareness change from negative to positive? Multi- and bivariate correlations between the five SAI and the five SAWS subscales, between Spiritual Awareness and the five SAWS subscales, and between Spiritual Awareness and the mean of the five SAWS subscales were performed, excluding self-identified atheists. Results found the direction of the correlations still negative. An increase in wisdom development still associated with a decrease in Spiritual Awareness. The SAI seems more appropriate for a Christian than a secular population.

Instrument improvement. The self-report character of the SAI and SAWS is a limitation. Self-reporting tends to inflate endorsement in a socially desirable direction. While the SAI included an Impression Management subscale, its use in this study obstructed structural equation modeling data convergence. SAI authors (Hall & Edwards, 1996, 2002) supported eliminating the IM subscale for SAI research until further study improves its validity. The SAWS did not include a social desirability subscale.

Even though the measures (MHC H-PP, SAI, and SAWS) report adequate reliability and validity, researchers need to be cautious about drawing conclusions about a factor from a single scale. As noted, structural equation modeling recommends four measures per construct (Tabachnick & Fidell, 2007). For measurement of cognitive development that better meets identification requirements, more instruments should be added to both the MHC H-PP and the SAI.

Procedure improvement. The correlational nature of the study is another limitation. The causal inferences, drawn from structural equation modeling, even based in sound theory, do not equate with strict experimental causality. Conclusions derived from correlational data are tentative, and further research is encouraged.

The SAI was initially tested with samples of students in classes at Christian universities for extra credit. They might be presumed to be more motivated than this study's more heterogeneous, broader-than-Christian sample. This study was conducted not in class but online, where motivation might be comparatively diminished. For the initial in-class investigations, the SAI would have been the sole instrument on which participants focused when they completed it. In this study the SAI followed a somewhat detailed MHC demographics questionnaire and an intellectually challenging HP-P dilemma. Fatigue and need to wrestle with some rather challenging SAI items might have contributed to less-than-fully-invested participant responding, and resultant fairly wide variability in scores.

Incomplete responses to the measures from many participants' partial noncompliance constituted another limitation. Two hundred and twenty-one (221) participants answered some part of the survey's three instruments. Only 134 participants completed all or nearly all of the survey. An additional 87 responses would have comprised a more compelling sample.

Methodological improvement. A more valid study would be longitudinal in nature, rather than cross-sectional. Particularly with a topic such as development, research with a representative cohort over time would improve generalizability of results. A longitudinal study taking measurements at two or more periods over time, can

discriminate changes in individuals as they age, rather than as with a cross-sectional study, simply differences among people at a single point in time (Diggle, Haegerty, Liang, & Zeger, 2002). It would be interesting to conduct clinical trials, using recommended interventions to increase level of cognitive, wisdom, and/or spiritual development, and to compare results with baseline. Using structural equation modeling longitudinally would involve checking whether scores on construct measures remain stable or change over time.

Suggestions for Future Research

Future research on the topic of this study might either limit the population sample to theists or use a different measure of spiritual development that is *not* theoretically based on relating to a personal God as Object. As mentioned, for structural equation modeling methodology, approximately four measures per construct yield a more valid result. Additional measures of cognitive and spiritual development would be needed to complement the H-PP and SAI.

If the cognitive development measure(s) are based in Model of Hierarchical Complexity theory, it might be advisable to consider transforming the wisdom development and spiritual development measurement items to correspond with MHC developmental levels. MHC developmental stage theory, it will be remembered, is thought to apply across domains. As mentioned, MHC theorist Commons would be available to help. A problem would be that the MHC-transformed measures would probably not be standardized.

The sample parameters could be broader, beginning younger than undergraduate age, and there might be effort to recruit additional older participants. This would give a

wider range of cognitive development. The focus on adult students and alumni could be broadened to include working and non-working youth and non-college adults. This would provide a wider range for all three constructs—cognitive, wisdom, and spiritual development.

As mentioned, with inclusion of additional measures requiring substantially more time commitment, the research protocol would have to move off-line. Recruits would need to spend time with test administrators at testing sites, and incentives would need to be more inviting. If measures were administered by psychology professors to their classes, some logistics challenges would be solved, but the college population would need to be supplemented by alternate arrangements for other-than-college populations.

Summary and Conclusions

This study found that, with structural equation modeling, spiritual development could be measured only by the Spiritual Awareness subscale. Data from the SAI developmental subscales did not converge with the model. (1) Cognitive development correlated significantly, positively with Spiritual Awareness, with small effect size. Cognitive development did not correlate significantly with wisdom development. Wisdom development correlated significantly, negatively with spiritual awareness, with moderate effect size. (2) Wisdom development did not mediate the impact of cognitive development on spiritual awareness. (3) None of the demographic variables—gender, age, education level, socioeconomic status, or religious affiliation/disaffiliation—correlated significantly with cognitive development, wisdom development, or spiritual awareness.

The cognitive development—spiritual awareness significantly positive correlation may be attributable to factors such as congruence between intellectual and affective interaction on spiritual experience, or the cognitive-spiritual nature of meaning-making development. It is not clear why increase in wisdom development significantly correlated with decrease in spiritual awareness. U.S. demographic trends find that individuals younger in age and higher in education and income, as were this study's sample, tend to be lower in religiousness, which would likely translate to lower likelihood of endorsing awareness of divine presence.

Faith perspective appears to make a definite difference regarding participant response, not for cognitive development (with the MHC H-PP) or secular-oriented wisdom development (with the SAWS), but when spiritual development is measured (as with the SAI) with a personal God as relational Object. Non-Christian participants were encouraged to mentally substitute "higher power," but it is impossible to know whether they actually did. If so, one probably does not relate personally to a higher power, at least to the extent that would permit assessment of spiritual development. The study afforded insights on the areas of cognitive, wisdom, and spiritual development. Future researchers might wish to pursue the same or a similar topic using a theistic or Christian population, with a different instrument for spiritual development, or with a different research design.

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APPENDICES

APPENDIX A

DSM-IV V 62.89

Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision

(DSM-IV-TR)V 62.89. Religious or Spiritual Problem

This category can be used when the focus of clinical attention is a religious or spiritual problem. Examples include distressing experiences that involve loss or questioning of faith, problems associated with conversion to a new faith, or questioning of spiritual values that may not necesSarily be related to an organized church or religious institution (APA, 2000, p. 741).

The Joint Commission (for Accreditation of Health Care Organizations)

Spiritual Assessment

Spiritual assessment should, at a minimum, determine the patient's denomination, beliefs, and what spiritual practices are important to the patient. This information would assist in determining the impact of spirituality, if any, on the care/services being provided and will identify if any further assessment is needed. The standards require organizations to define the content and scope of spiritual and other assessments and the qualifications of the individual(s) performing the assessment.

Examples of elements that could be but are not required in a spiritual assessment include the following questions directed to the patient or his/her family.

Who or what provides the patient with strength and hope?

Does the patient use prayer in their life?

How does the patient express their spirituality?

How would the patient describe their philosophy of life?

What type of spiritual/religious support does the patient desire?

What is the name of the patient's clergy, ministers, chaplains, pastor, rabbi?

What does suffering mean to the patient?

What does dying mean to the patient?

What are the patient's spiritual goals?

Is there a role of church/synagogue in the patient's life?

How does your faith help the patient cope with illness?

How does the patient keep going day after day?

What helps the patient get through this health care experience?

How has illness affected the patient and his/her family?

("http://www.jointcommission.org" www.jointcommission.org)

APPENDIX B

Piagetian Stages of Cognitive Development

Jean Piaget (1896-1980), one of the most influential 20th-century developmental psychologists, helped originate the constructivist theory of education. Piaget's theory pursues two principal dimensions of cognitive development: process and stages. The process of cognitive development is driven by an organism's behaviors in adapting to its environment. The individual uses mental organizations (schemas) to represent its perceptions of the world and its actions. The individual adapts through a drive to achieve schema-environment balance (equilibration). Infants operate with inborn schemas called reflexes. The growing child replaces reflexes with constructed schemas. Throughout life individuals adapt by using two processes. Assimilation transforms what it encounters into preexisting cognitive structures. By accommodating the individual changes cognitive structures to receive environmental input. As schemata become responsible for increasingly complex behaviors they are called structures. Increasingly complex structures are hierarchically organized (general to specific) (Huitt & Hummel, 2003).

Piagetian stages of cognitive development include:

(1) sensorimotor (infancy). Intelligence is shown through motor activity and physical interaction with the world. At about seven months, children acquire object permanence. By the end of this stage some symbolic (language capacity develops.

(2) pre-operational (toddler and early childhood). The child gains use of language and grows into use of memory and imagination. Thinking is predominantly egocentric and non-logical.

(3) concrete operational (elementary grades and early adolescence). Intelligence is shown through use of concrete objects as symbols that can be manipulated logically and systematically. Egocentric thought diminishes as operational thought, with reversible mental actions, develops.

(4) formal operational (adolescence and adulthood). Intelligence is displayed through use of logical symbols associated with abstract ideas. At the beginning of this period, egocentric thinking again predominates. “Only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood” (Huitt & Hummel, 2003).

APPENDIX C

Model of Hierarchical Complexity Moral Dilemma

The Helper-Person Problem

Please answer all parts of this questionnaire. Read each section and answer the questions in the order given. Do not go to the following section before you have finished the previous section. Remember this is not a test of your ability as an individual. Rather, we wish to know how adults, in general, reason about the issues presented here. The order of answering is essential to this study about adult reasoning.

Helper-Person Problem

Date of birth: month: _____ day: _____year: _____ age: _____

gender: _____

Place of birth: city: _____

country:_____

Place of residence: city _____ zip: _____

country: _____

Religion:

_____

If married: 1st _____ 2nd _____ 3rd _____ 4th _____ marriage
If not married: single _____ divorced _____ spouse deceased _____
domestic partner _____
Child in family: 1st _____ 2nd _____ 3rd _____ 4th _____ other _____
Number of sisters: _____ Number of brothers: _____
How many children do you have? 0 1 2 3 4 5 or more
How many grandchildren do you have? 0 1 2 4 8 16 or more

Your occupation:

_____

Your previous occupation:

_____

Father's occupation:

_____

Mother's occupation:

_____

Spouse's occupation:

_____

Father's education:

_____

Mother's education:

_____

Spouse's education:

_____

Please indicate:	Years in school	Major/Minor	Year graduated	Degree earned
Grade school				
High school				
College				
Graduate school				

Please read the following guidance and assistance discussions and answer the questions that follow.

(Systematic 11). Flynn offers effective guidance and assistance that compares well to other forms of guidance and assistance for this problem. Flynn explains the helping effects of every guidance and assistance. Flynn describes all the risks of each guidance

and assistance. Flynn asks the Person to relate back that explanation. Flynn Says it is up to the Person to decide on a guidance and assistance. Flynn asks if the Person supports the suggested guidance and assistance. The Person thinks about what Flynn has Said. Feeling that Flynn knows best, the Person is prepared to accept Flynn's guidance and assistance.

(Abstract 9).Kents recently completed training on providing guidance and assistance that was designed for the Person's problem. Kents says that the best counselors regularly recommend this guidance and assistance. Kents explains the method and tells the Person that it will probably work for the Person as well. Kents also tells the Person about other methods that may work. The Person is asked if the Person has any questions. The Person does not have questions, and Kents asks if the Person wants to accept the recommended guidance and assistance. Feeling that Kents knows best, the Person accepts the guidance and assistance.

(Formal 10). Bower offers to provide guidance and assistance that has been studied and is shown to work well. Bower shares the fact that not everyone has had a positive outcome from the guidance and assistance. Bower then reads a description of the guidance and assistance and its risks from a colleague's book. Bower points out that any guidance and assistance will have risks. Bower asks if the Person understands the proposed guidance and assistance and its outcome possibilities. After thinking carefully, the Person feels comfortable that Bower is capable. Feeling that Bower knows best, the Person accepts the guidance and assistance.

(Metasystematic 12). Allen speaks with the Person to assess the problem. During the conversation, Allen offers to provide guidance an assistance seen as most effective in treating this problem. Allen presents other forms of guidance and assistance as well, and discusses the benefits and risks of each as well, including doing nothing. Allen, seeking to understand the Person's needs and concerns, asks and answers many questions. Allen also sees if the Person's body language matches their statements. Allen asks if the Person is ready to make a choice based on their previous discussion. Feeling Allen knows bets, the Person accepts the guidance and assistance.

(Concrete 8). Brown offers to provide the Person guidance and assistance preferred by colleagues. Brown says that others who are friends use this guidance and assistance. A colleague is called in to tell the Person again about the guidance and assistance. With great concern, Brown asks if the Person would like to hear a third Person explain the guidance and assistance. Brown's Person is told that these people had good results with that guidance and assistance. Brown instructs the Person to support the guidance and assistance. The Person thinks seriously about what Brown has said. Feeling that Brown knows best, the Person accepts the guidance and assistance.

Rate each of the methods by selecting a number on the following scales. A rating of 1 means you think the Helper has the worst method. A rating of 6 means you think the Helper has the best method. Not all the ratings need to be used. A particular rating may be given to more than one Helper.

1. Rate the method of offering guidance and assistance of each Helper.

   Extremely Poor 1 2 3 4 5 6 Extremely Good
   Flynn
   Kents
   Bower
   Allen
   Brown

2. Rate the degree to which each Helper informed their Person.

   Extremely Poor 1 2 3 4 5 6 Extremely Good
   Flynn
   Kents
   Bower
   Allen
   Brown

3. Rate how likely you would be to accept the guidance and assistance offered by the Helper.

   Extremely Poor 1 2 3 4 5 6 Extremely Good
   Flynn
   Kents
   Bower
   Allen
   Brown

APPENDIX D

Erikson's Theory of Psychosocial Development

Erik Erikson's theory accounts for the influence of social experience over the lifespan. Central to progression through developmental stages is the emergence of ego identity, the conscious sense of self acquired through social interaction. Ego identity, Erikson thought, is constantly in process, affected by new information and experience. Along with ego identity, a sense of competence contributes to behavioral motivation.

In each stage, the individual experiences some conflict that marks a crucial developmental turning point. Successful stage negotiation involves acquiring an important psychological quality. The individual passing well through a stage, will gain a feeling of mastery, called ego strength or virtue. A poorly managed stage will leave the person with a sense of inadequacy.

Stage 1: Trust vs. Mistrust (birth to age 1). In this fundamental stage, development of trust is based on the dependability of caregivers and quality of the infant's interaction with them. The baby who acquires trust will continue to feel safe and secure in life. Failure to acquire trust leads to fear and a sense that the world is unpredictable and inconsistent.

Stage 2: Autonomy vs. Shame and Doubt (early childhood). The stage emphasizes growth into increased sense of personal control over, for example, food, toy, and clothing choice. Toddlers who successfully negotiate this stage feel confident and secure; those who do not are left with self-doubt and a sense of inadequacy.

Stage 3: Initiative vs. Guilt (preschool years). By directing play and other social interaction, youngsters begin to assert their power over the world. Children successful in

this stage feel capable of leading others. Those who are not, lack initiative and feel a sense of guilt.

Stage 4: Industry vs. Inferiority (ages 5 to 11). Children encouraged and commended by their parents, teachers, and peers develop a sense of pride in their abilities and a feeling of competence. Those who receive little or none, feel unsure about their ability to succeed.

Stage 5: Identity vs. Role Confusion (adolescence). In this stage, young people explore their independence and develop a sense of self. Those whose personal exploration is reinforced emerge with a strong sense of self and of autonomy. Unsuccessful resolution of this stage leaves the individual feeling insecure and confused about their beliefs and desires.

Stage 6: Intimacy vs. Isolation (early adulthood). At this stage individuals explore opportunities for close personal relationships. Those successful at this stage develop secure, intimate, committed bonds with others. According to Erikson, a strong sense of identity is foundational to forming of secure relationships. Those with a poor sense of self tend to suffer loneliness, emotional isolation, and depression, and to lack committed relationships.

Stage 7: Generativity vs. Stagnation (middle adulthood). Life building during adulthood focuses on family and career. Successful negotiators of this stage believe that through their activity in home and community they make a contribution to the world. Those who fail feel uninvolved and unproductive.

Stage 8: Integrity vs. Despair (older adulthood). This stage emphasizes reflecting back on life. Persons who fail to acquire ego integrity experience inordinate

regret and feel that their life has been wasted. They are left with bitterness and a sense of despair. Those who develop a sense of integrity look back with a general sense of Satisfaction about their life, even in face of death. They attain wisdom. (Wagner, 2009, http://psychology.about.com/od/theoriesofpersonality/a/psychosocial.htm)

APPENDIX E

Studies Supporting MHC Theory

MHC empirical studies on stage and professional decision-making include Kearney, Gutheil, and Commons (1996) on “trading forensic and family commitments”; and Commons (2000) on “the power therapies: a proposed mechanism for their action and suggestions for future empirical validation.” Strasburger, Miller, Commons, Gutheil, and LalLlave (2003) empirically studied “stress and the forensic psychiatrist: a pilot study.” Miller, Commons, and Gutheil (2006) empirically investigated “clinicians’ perceptions of boundaries in Brazil and the United States.” Commons, Rodriquez, Adams, Goodheart, Gutheil, and Cyr (2006) empirically studied “informed consent: Do you know it when you see it? Evaluating the adequacy of patient consent and the value of a lawsuit.”

MHC-based studies on quantitative analyses of behavior include a comprehensive study in three parts by Commons (1977) on “how reinforcement density is discriminated and scaled.” Commons (1979) empirically researches “decision rules and signal detectability in a reinforcement-density discrimination.” An empirical study by Commons, Woodford, and Ducheny (1983) investigates “how reinforcers are aggregated in reinforcement-density discrimination and preference experiments.” Commons, Woodford, and Trudeau (1988) study “how each reinforcer contributes to value: ‘noise’ must reduce reinforce value hyperbolically.”

MHC developmental empirical studies include Richman, Miller, and DeVine (1992) on “cultural and educational variations in maternal responsiveness.” Kearney, Gutheil, and Commons (1996) empirically studied “trading forensic and family

commitments." Price, Kafka, Commons, Gutheil, and Simpson (2003) empirically investigated "telephone scatologia comorbidity with other paraphilias and paraphilia-related disorders." And Commons-Miller, and Commons (2003) empirically studied "recognizing specialized terminology presented through different modes."

APPENDIX F

MHC Stages of Moral Perspective Taking

In the medical context, moral development perspective taking is necessary both for assessing the competence of the patient to make autonomous decisions and for understanding the patient's preferences (Commons, Sonnert, Gutheil, & Bursztajn, 1991). Only if physicians understand how the patient views the symptoms, illness, treatment, and life situation---the patient's perspective—can they respond most appropriately; that is, physicians have to understand the patient's wants and needs by looking at the doctor-patient interaction from the patient's side as well as their own. The theory of social perspective taking can be helpful in identifying the stages in the development of physicans' perspective taking. At high stages, for example, physicians are proficient in understanding their patients and therefore relate to them successfully. In contrast, lower stage perspective taking may seriously hamper social decision making through inattention to the patient's perspective. As the physican's stage of perspective taking increases, the patient's role in the decision process also increases. We here present our (Commons, Sonnert, Gutheil, & Bursztajn, 1991; Sonnert & Commons, 1994) brief overview of the stages of moral development Gilligan, 1981; Kohlberg, 1984) as they might apply to the issues in our study.

Stages of Moral Development. Abstract perspective taking skill (Stage 3, GSM Stage 4a—Abstract) is required in order to grasp that patients form opinions of physicians based on how the physicians relate to the patients (see *Scoring* section). Physicians at this stage thus understand that they have a reputation

among patients, staff, and other physicans about how caring, understanding, and competent they are.

Taking another's perspective in a *logical* fashion requires *logical* perspective taking (Stage ¾, GSM Stage 4b—Formal). Physicians operating at this stage may see the patients as rational or irrational, logical or illogical, but can only attend logically to either the rational aspects or the affective aspects of patients' situations at one time. On the one hand, communications that are logically organized may not address patients' affective reactions or idiosyncratic choices; on the other hand, affectively appropriate commuications may not address patients' needs for empirical data about their situations. Thus, people performing at this stage cannot integrate the two variables, emotions, and interests.

Stage 4 (GSM Stage 5a—Systematic) systems perspective taking requires the integration of two or more variables into a system. At that stage, the doctor-patient interaction is seen as a network of interactive causes—for example, emotional or rational self-interests. Physicans reasoning at this stage understand that society regulates their relationships with patients. They work to understand the legal and professional norms within the system. These physicans may see that the quality of their relationships with patients may even affect the likelihood that they will be sued for malpractice.

At Stage 4 (GSM Stage 5a), although doctors may *know* the other's perspective in an interaction, they may still prefer to view interactions from their own perspective. They may see themselves as an individual system in conflict

with the hospital or professional system. I the social context, the preferred persepctive of physicians at this stage often depends on their own position in the social hierarchy. New residents, for example, may prefer the perspective of the patients over the perspective of the chief of medicine at the hospital. They may defend the patients' behavior and not hold them accountable. The assistant chief might, in turn, prefer the perspective of the chief of medicine. I sum, doctors' and insitutions' perspectivse of patients' concerns and problems are more complex and informed than at Stage ¾ (GSM Stage 4b).

A person's reasoning may move into Stage 5 (GSM Stage 5b—Metasystematic) by assuming multiple vantage points; for example, pnysicians report that they see their relationships to their patients in a new light after they have been patients themselves, suffering from a serious illness. People reasoning at Stage 5 (GSM Stage 5b) are proficient at taking and integrating *multiple perspecives.* This often leads to the insight that everyone—from the most difficult patient to the easiest, from the lowliest patient to the most influential—needs and benefits from respect, care, and concern. The hierarchicial arrangement of the validity of perspectives characteristic of Stage 4 (GSM Stage 5a) is replaced by the view that *all* perspectives have equal validity; thus, the views from any person's vantage point are potentially valid. The person reasoning at Stage 5 constructs a new persepctive that integrates all the perspectives. Here, physicans may separate themselves from their patients fully, while at the same time they understand their interdependence and remain empathic. This is because doctors understand that the patients' wishes may be quite different from their own; their

patients' decisions to live or die are not reflections on their competence as doctors. The skill of taking multiple perspectives and integrating these perspectives is, then, a developmental achievement.

At Stage 5, physicians strive to fit points of view with their own, as well as with the wider societal perspective in which doctor-patient interactions are embedded. By coordinating the patients' perspectives with their own, doctors construct a new "super system." In this context, then, a treatment plan should be most effective when it integrates both the patients' and the doctors' perspectives; patients will understand their role in the treatment; doctors will understand the patients' problems and their proficieincy in dealing with those problems. (Commons, Lee, Gutheil, Rubin, Goldman, and Applebaum (1995). Moral state of reasoning and the misperceived "duty" to report past crimes (misprision). www.dareassociation.org/papers, pp. 416-417)

APPENDIX G

Institutional Review Board Approval

Cleveland State University
engagedlearning

College of Education and Human Services
Office of Doctorial Studies

Memorandum

To: Elizabeth Welfel
CASAL

From: Barbara Bryant
IRB Recording Secretary

Date: February 22, 2011
RE: Results of IRB Review of your project number: 29254-WEL-HS
Co-Investigator: M. Clare Smith
Entitled: The relationships among cognitive, spiritual and wisdom development in adults

The IRB has reviewed and approved your application for the above named project, under the category noted below. Approval for use of human subjects in this research is for one year from today. If your study extends beyond this approval period, *youmust contact this office to initiate an annual review of this research.*

By accepting this decision, you agree to notify the IRB of: (1) any additions to or changes in procedures for your study that modify the subjects' risk in any way; and (2) any events that affect that safety or well-being of subjects. Notify the IRB of any revisions to the protocol, including the addition of researchers, prior to implementation.

Thank you for your efforts to maintain compliance with the federal regulations for the protection of human subjects.

Approval Category: Date: 02/17/2011

X Expedited Review: Project approved, Expedited Category 7

cc: Project File

Mailing Address: 2121 Euclid Avenue, EB 215 • Cleveland, Ohio 44115-2214
Campus Location: Education Building, Suite 215 • 2485 Euclid Avenue • Cleveland, Ohio
http://www.csuohio.edu/coehs/departments/phd • (216) 687-4697 • Fax (216) 875-9697

APPENDIX H

Call for Participants
Informed Consent

A doctoral student at Cleveland State University, Mary Clare Smith is conducting a study supervised by Dr. Elizabeth Welfel, in which you are invited to participate. The purpose of the study is to gain insight into the relationships among the development of reasoning and of spirituality, and how people of different ages perceive themselves with respect to life experiences. We are asking you to complete an online survey including a brief demographic questionnaire and three measures. The survey is being given to current undergraduate and graduate students. You are asked to read documents and respond to three questions that follow, and to respond to the items in two additional measures. Some questions in the second instrument show a Christian orientation. Since the wording cannot be changed, "God" should be understood as "higher power" and "church" as "place of worship." The complete survey will probably take about 30 minutes. It is our hope that information from this survey will contribute to a better understanding of whether level of reasoning correlates with level of spirituality.

This study is concerned with aggregated data rather than individual participant scores. Your responses to the survey will be anonymous. Your name will not be collected or appear anywhere on the survey. Complete privacy will be guaranteed. This study poses no risks above and beyond those encountered during the course of everyday living. Participation is completely voluntary and you may withdraw at any time. Participants who complete the survey are eligible to enter a drawing for a $100 Amazon.com gift certificate. Those who wish to participate in the drawing submit their email address at a separate ePrize link not associated with their survey responses. There is no other reward for participating and there is no consequence for not participating.

For further information regarding this research please contact the investigator Mary Clare Smith at 216-281-4044, ext. 133, email: s.m.smith97@csuohio.edu, or Dr. Elizabeth Welfel at 216-687-4605, email: e.welfel@csuohio.edu.

If you have any questions about your rights as a research participant you may contact the Cleveland State University Institutional Review Board at (216) 687-3630.

I am 18 years or older and have read and understood this consent form and agree to participate. Your clicking on the link here constitutes your agreement with this consent form.

Here is the link to access your survey.
https://www.surveymonkey.com/s/NX72DD6

Thank you in advance for your cooperation and support.

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