Religion and Human Development in Adulthood: Well-Being, Prosocial Behavior, and Religious and Spiritual Development

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In recent years there has been an upsurge in research and publication in the psychology of religion, including work with implications for adult development. This article reviews the relevant literature, considering themes such as religion and spirituality and well-being in the adult years; religion, prosocial, and antisocial behavior; and models of religious and spiritual development incorporating life stages in the adult years. Practical implications for education, psychotherapy, and other domains in applied developmental psychology are considered.

Keywords: religion, adult development, model of hierarchical complexity, spirituality, psychology

The history of psychological science, since its inception, is replete with interest in the psychology of religion and the role of religion and spirituality in human development. Early contributors in psychoanalysis, experimental, and personality psychology wrote on the topic, and enquired about what led to, or impeded "healthy" psychological development. Today, as recent meta-analyses of the literature demonstrate, psychology is rich with research on religious and spiritual development and its relationship to moral development (e.g., Day, 2007a, 2007b, 2008a, 2008b; 2010a, 2010b; 2013a, 2013b, 2013c; Day & Naedts, 2006; Day & Youngman, 2003; Day & Jesus, 2013; Robinson, 2013; Spilka, Hood, Hunsberger, & Gorsuch, 2003; Streib, Hood, Keller, Csoff, & Silver, 2009; Toth-Gauthier & Day, 2015), as well as psychological studies comparing and, sometimes contrasting, religious and spiritual experience (e.g., Streib & Hood, 2015; Zinnbauer & Pargament, 2005), and religion in its relationship to positive psychology and human well-being (e.g., Day, 2010b; Pichon, Boccato, & Saroglou, 2007; Saroglou, Buxant, & Tilquin,

2008; Spilka et al., 2003). All of this research has implications for understanding, fostering, and enhancing adult development.

Religious and/or Spiritual?

A topic that has garnered increasing attention in public media, and opinion surveys, is the relationship between religion and spirituality, and the supposed increase, especially in Western Europe and North America, in the number of those describing themselves as spiritual, but not religious. Are religious and spiritual development the same? If not, how are they different?

In their then exhaustive meta-analysis of hundreds of studies looking at the relationship between religiosity and spirituality, Zinnbauer and Pargament (2005) showed there was no clear distinction in the definition of *religious* and *spiritual* in the in the scientific literature in psychology.

They acknowledged, though, that some studies showed contrasts between the two terms. In these, *religious* was associated with institutionalized practices, beliefs, and authority structures linked to identifiable religious traditions, and *spiritual* was associated with a personal quest for meaning, and experience of the transcendent, quasi-independent of institutionalized religion. For our purposes, it is relevant to note, as I and others have elsewhere done, that this difference has become increasingly marked in studies of adults, and would appear particularly salient for studying what spiritual *development* means to de-

veloping adults (Day, 1994, 1999, 2010b, 2013a; Robinson, 2013; Sinnott, 1994, 2002, 2010).

Streib et al. (2009) and Streib and Hood (2015) have carefully studied this relationship across cultures and religious traditions, observing that people may describe themselves as *equally religious and spiritual, more religious than spiritual, more spiritual than religious,* or *neither religious nor spiritual,* depending on personal history, religious education, cultural norms and socialization, and critical life events interacting with critical transitional periods in the life cycle.

Most people, in these studies across cultures, describe themselves as religious and spiritual, in keeping with the findings of North American subjects (Cook, Borman, Moore, & Kunkel, 2000; Corrigan, McCorkle, Schell, & Kidder, 2003; Shahabi et al., 2002; Zinnbauer et al., 1997). Until recently, despite contrasting positions of religion and spirituality in a small minority of subjects, and the use of *spiritual* as an explicitly antireligious term in an even smaller subgroup, spiritual growth has been associated with what most have experienced to be the highly supportive framework of religion (see also Day, 2010b, 2013a).

More recent research indicates a marked increase in the numbers of people who describe themselves as "spiritual but not religious," dissociating personal quest for meaning, wisdom, and a desire to count for good, from belonging to organized religious groups. Moreover, there is a marked increase in people "deconverting" from organized religion, while continuing to view themselves as "spiritual," people for whom "deconversion" is described as a pivotal *developmental* process, sometimes associated with trauma, but counting for good in the longer term. There is also some evidence that people who describe themselves as "spiritual but not religious" score higher on measures of cognitive complexity in religious cognition, religious judgment, and moral development, and are both more socially tolerant than people who actively believe and practice Christian religion, and more willing to help those who do not resemble themselves when perceiving others in distress (Belzen, 2015; Blogowska, Saroglou, & Lambert, 2013; Ganzevoort & Roeland, 2014; Robinson, 2013; Streib et al., 2009; Streib & Hood, 2015).

Further research indicates that neither religious nor spiritual experience can be collapsed to other categories; they cannot be subsumed, say, to moral, or aesthetical, experience, and are viewed by those who claim them as being central (for good or ill) to identity, meaning and purpose in life (Day, 2011).

For Better or Worse: Does Religiousness and/or Spiritual Practice Contribute to Well-Being in Adulthood?

Do religious belief, involvement, and spiritual practice (practiced within or independently of organized religion) contribute to well-being in adulthood? This longstanding question in psychological science continues to attract considerable attention (Day, 2013a; Robinson, 2013).

Most researchers, including those sensitive to cultural diversity, observe that religion and spirituality are associated with positive indices for physical and mental health, perceptions of well-being, relationships with others, meaning making, coping with life difficulties, and contributing to a feeling that life is orderly and good (Belzen, 2009; Day, 2010b, 2013a; Emmons & Paloutzian, 2003; Hill et al., 2000; Hood, 2003; Miller & Thoresen, 2003; Moberg, 2002; Pargament, 1997; Park, 2005; Shafranske, 2002; Shafranske & Bier, 1999; Zinnbauer & Pargament, 2005). For women (Day & Naedts, 1997, 2006; Popp-Beier, 1997; Ray & McFadden, 2001; Roukema-Koning, 2005; Wink & Dillon, 2002), some members of minority religious communities in a given culture, and ethnic minorities (Armstrong & Crowther, 2002; Mattis et al., 2001; Wheeler, Ampadu, & Wangari, 2002), religion may be a particularly strong source of support, but may also contribute to oppression, restriction, and denigration.

How do religious experience, involvement, and spiritual practice affect positive adult development?

Positive emotions, such as happiness, wonder, awe, and joy, are correlated with both religiosity and self-described spirituality, and when induced, even under experimental conditions, enhance open-mindedness, openness to transcendence and a spiritual conception of self, relationships, and world (Day, 2010b; Saroglou et al., 2008). Religious and spiritual involvement are associated with self-esteem, emotional and physical well-being across cultures (Francis & Kaldor, 2002; McIntosh & Spilka, 1990), though this is partially dependent on whether religious involvement is a matter of intrinsic motivation in contrast to extrinsic motivation

(Laurencelle, Abell, & Schwartz, 2002; McIntosh & Spilka, 1990; Ryan, Rigby, & King, 1993), and whether images of God are benevolent, instead of punitive and restrictive (Culbertson, 1996; Day, 2010b; Pargament et al., 1998). Multifactorial assessments involving thousands of subjects, across cultural settings, show religious beliefs and commitments, and belonging to a religious community, among the best predictors, of life satisfaction and a sense of well-being in adulthood, sense of personal efficacy and control, and successful coping with life difficulties (Baumeister, 1991; Day, 2010b; Delbridge, Headey, & Wearing, 1994; Doehring et al., 2009; Geyer & Baumeister, 2005; Jones, 1993; Klaassen, Graham, & Young, 2009; Pargament, 1997; Silberman, 2005; Spilka et al., 2003), particularly for older adults (Chamberlain & Zika, 1992; Willits & Crider, 1989).

Religious involvement and spiritual practice enhance *forgiveness* as an important attitudinal and behavioral component of well-being, especially in adult relationships, are strongly correlated with the belief that forgiveness is an important skill and value in life (Gorsuch & Hao, 1993) and with low scores on hostility measures, decreases and lower scores on both subjective and objective measures of stress, and reductions in depression and anxiety (Coyle & Enright, 1997; Day, 2010b; Spilka et al., 2003; Worthington, Berry, & Parrott, 2001). This may be part of how religiosity is related and provides resources to marital stability and marital satisfaction (Evans, McIntosh, & Spilka, 1986; Filsinger & Wilson, 1984; Gruner, 1985). People who call themselves religious, but who are not involved in traditional religious practices or religious groups, have lower levels of satisfaction as well as lower scores on indices of personal and social integration, though this association does not hold for those who describe themselves as spiritual but not religious (Bock & Radelet, 1988). Religiosity and well-being for married women who work outside the home seems to be correlated, positively or negatively, to attitudes in the religious group about women's independence and right to self-determination (Bridges & Spilka, 1992; Day, 2010a; Johnson, Eberley, Duke, & Sartain, 1988; Messer & Harter, 1986).

Prayer is important in all religious traditions and many spiritual practices. Empirical studies show prayer practices to be positively correlated with perceived problem-solving efficacy and personal growth, contribute positively to processes of personal integration (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Janssen, De Hart, & Den Draak, 1989; Poloma & Gallup, 1991), and can be an effective problem-focused mechanism for coping with tragedy, problems in relationships, illness, and other forms of stress and trauma (Bjorck & Cohen, 1993; Carver, Scheier, & Pozo, 1992; Ladd, Milmoe, & Spilka, 1994; Ladd & Spilka, 2002; Pargament et al., 1998). *Meditative* prayer, across several religious traditions, seems to reduce anger, lessen anxiety, and aid in relaxation (Carlson, Bacaseta, & Simanton, 1988), increase empathy and moral sensitivity (Hargot, 2007), and in some cases, proves a useful adjunct to psychotherapy (Finney & Malony, 1985), when the motivation for praying is intrinsic and not merely rote or imposed through institutional control and/or fear of exclusion from a group, or from God's favor (Day, 1999, 2010b; McCullough & Larson, 1999; Pargament et al., 1998).

Experimental studies and reviews of the literature by Pichon et al. (2007) and Saroglou (2004, 2006) show religious affiliation, belief, and practice are often correlated with *prosocial attitudes* such as empathy, a general concern for others, volunteering, valuing benevolence, and a perceived willingness to go to the aid of others in distress, assertions supported by the empirical studies of Batson, Anderson, and Collins (2005), Batson, Schoenrade, and Ventis (1993), McCullough and Worthington (1999), Saroglou (2002), and Saroglou, Pichon, Trompette, Verschueren, and Dernelle (2005) in Jewish, Christian, Muslim, and Buddhist samples. However, religious elements, especially certain forms of fundamentalism and orthodox adherence, particularly where shared with endorsements of right-wing authoritarianism, are often correlated with *antisocial* attitudes, egotism, unwillingness to forgive, discrimination, and prejudice, especially toward members of outgroups (Batson et al., 2005; Batson et al., 1993; Blogowska et al., 2013; Cohen, Malka, Rozin, & Cherfas, 2006; Hunsberger & Jackson, 2005; Jackson & Esses, 1997; McCullough & Worthington, 1999). What is considered prosocial or antisocial may vary according to religious affiliation (Cohen et al., 2006). Pichon et al. (2007), Saroglou (2004, 2006), and Saroglou et al. (2005) cautioned that self-report studies tend to show

positive correlations between religiosity and prosocial behavior, whereas experimental studies controlling for contextual variables and conditions sometimes show the religiously committed to be particularly antisocial, much more so, say, than agnostics, atheists, or those describing themselves as "spiritual but not religious" (Clobert, 2014; Clobert & Saroglou, 2013; see also Day, 2010a, 2010b, 2013a). Differing styles of belief and understandings of dogma and doctrine, even within a given religious tradition, are often associated with markedly contrasting dispositions in social attitudes, prejudice, and prosocial conduct, in both self-report and experimental studies, from highly tolerant and benevolent dispositions to strongly racist, homophobic, and zenophobic ones (Blogowska & Saroglou, 2013; Blogowska et al., 2013; Desimpelaere, Sulas, Duriez, & Hutsebaut, 1999; Duriez, 2003; Duriez & Hutsebaut, 2000; Fontaine, Duriez, Luyten, Corveleyn, & Hutsebaut, 2005; Hutsebaut, 1995, 1996, 1997a, 1997b; Van Cappellen, Saroglou, & Toth-Gauthier, 2016). Priming of religious content in experimental studies can provoke both prosocial and antisocial behavior (Clobert, 2014; Clobert & Saroglou, 2013).

There is some evidence that religious commitment and spiritual practice foster *wisdom*, associated with enhanced problem-solving, perspective-taking, hopefulness, humility, generosity, tolerance, and communication with others, but that, again, this depends on the kind of religious group one is involved in (fundamentalist groups aren't good at producing these results), and whether, say, efforts are made within the group, or practices involved, to foster role-taking and appreciate diversity (Day, 1999, 2010b; Fowler & Dell, 2006; Miller & Cook-Greuter, 1994; Shedlock & Cornelius, 2003; Vandenplas-Holper, 2003; Wilber, 2000).

The growing literature on *meaning making* features important contributions from the psychology of religion, showing religion and spirituality's importance to how, and whether, adults find life meaningful, purposeful, and worth living (Westerink, 2013). This literature emphasizes, again, the increasing importance attributed to spirituality, whether linked to organized religion, or practiced apart from it, including spirituality among atheists (Schnelle & Keenan, 2013); meaning making, conversion, and deconversion (Keller, Klein, Hood, & Streib, 2013); meaning making in cultural approaches to the study of religion, cross-cultural studies of adult well-being, and cultural adaptation of migrants meaning making and psychological development in adulthood (Brandt, 2013; Day, 2013b, 2013c, 2013d); religion, spirituality, meaning making, and indices of psychological health (Dezutter & Corveleyn, 2013; Scardigno & Mininni, 2013); and religion, meaning making, and health in medical treatment and the treatment of addictions.

Day (2013a), Robinson (2013), Vandenplas-Holper (2003), Sinnott (2002, 2010) and Streib and Hood (2015) have observed that relatively *few longitudinal studies* show how religiosity, deconversion from religion, and spiritual orientation develop over the course of the life cycle. Such studies are imperative if we are to move from correlational self-report and experimental studies to a deeper appreciation of lived religion and spirituality as they interact with other factors fostering and/or detracting from positive development in adulthood, especially in the growing number of countries where active religious involvement characterizes only a small minority of the population, but where "spirituality" and spiritual practice, dissociated from traditional religious structures, continue to be prevalent. Longitudinal studies are also critical for appreciating cultural factors involving religion and spiritualty in adulthood (Armstrong & Crowther, 2002; Belzen, 2009; Buitelaar, & Zock, 2013; Day & Naedts, 1997, 2008a, 2013a, 2014; Day & Jesus, 2013; Day & Youngman, 2003; Mattis et al., 2001; Popp-Beier, 1997; Ray & McFadden, 2001; Roukema-Koning, 2005; Wheeler, Ampadu, & Wangari, 2002; Wink & Dillon, 2002; Zinnbauer, Pargament, & Scott, 1999).

In the paragraphs that follow, I look at the major models of religious and spiritual *development* in psychological science, and their implications for *adult development*.

Religious and Spiritual Development

Whether religion, and spirituality, foster, or inhibit, human development, has been an issue in the psychology of religion since its inception. Freud and Jung parted ways in part because of their different takes on this question, and Piaget, who wrestled with existential questions in relationship to religion, and taught both religion and

science in secondary school before going on to a full-time professorship at the University of Geneva, wondered about the relationship between development in scientific thinking and religious cognition; and whether one could characterize religious development in terms of stage and structure (Brandt, 2013; Formoshino, Day, Jesus, & Reis, 2014).

Influenced by Piaget's questions, Goldmann (1964) studied whether conceptual abilities and stage structures characteristic of reasoning in domains other than religious ones (mathematics, and physics), would apply in the description and interpretation of religious words, symbols, and religious images. He strong correlations between the logic employed by primary and secondary school pupils classical Piagetian experiments, and their logic in describing and interpreting religious images. Studies replicating, the basic, transversal methods and conceptual models in Goldmann's research, with larger, even cross-cultural, samples, and in a variety of educational settings, have produced strong predictive as well as stable interpretative results supporting Goldmann's findings (Day, 2010b, 2013a; Degelman, Mullen, & Mullen, 1984; Hyde, 1990; Peatling & Laabs, 1975; Tamminen & Nurmi, 1995). Spilka et al. (2003) have described these findings in their excellent summary of these studies. Pierce and Cox's (1995) meta-analytic study of research on the predictive power of Piagetian stage on interpretation of religious content, concluded that neither extent of familiarity with religious content, nor liberal political preference, interfered with, or offered compelling alternative explanation, for the relationship between the kinds of logic assessed on classical Piagetian tasks and levels of logic in interpreting religious phrases and images.

Neo-Piagetian Frameworks: Faith Development and Religious Judgment Development

The *faith development* model of James Fowler, and *religious judgment development* model of Fritz Oser, Paul Gmunder, and Helmut Reich, are two highly influential neo-Piagetian frameworks for considering religious and spiritual across the life span (Day, 2007a, 2008a, 2010b, 2013a; Day & Youngman, 2003; Spilka et al., 2003; Streib, 1997; Tamminen & Nurmi,

1995; Vandenplas, 2003; Wulff, 1997). Reich, a distinguished physicist, has used the religious judgment model in an effort to understand relationships across domains of religious thought, critical thinking, and intellectual development (e.g., Reich, Oser, & Scarlett, 1999). Faith development and religious judgment development research, has involved studies across the life span, including many adult participants, including longitudinal studies (Day, 2010b; DiLoreto & Oser, 1996).

Both Fowler and Oser are influenced by Lawrence Kohlberg's neo-Piagetian research on *moral development* relying at least in part on the use of hypothetical dilemmas and subjects' responses, in clinical interviews, to produce the data on which they base their findings. These responses are interpreted in terms of stages the authors claim to be universal, invariant, and hierarchical, in keeping with Piaget's notion of what counts as development (Day, 2007a, 2008a, 2010b; Fowler, 1981, 1987, 1996; Fowler & Dell, 2006; Oser & Gmunder, 1991; Oser & Reich, 1996; Oser, Scarlett, & Buchner, 2006; Reich et al., 1999).

Critical appraisals of Fowler's model (see Day, 2001, 2007a, 2008a, 2010b, 2013a, 2013b, 2013c; Day & Youngman, 2003; Fowler, 1981, 1987, 1996; Tamminen & Nurmi, 1995) show his construct of faith to be multifactorial, including dimensions cognitive development, Kohlberg's model of moral development, Erikson's stages of identity, Loevinger's and Levinson's concepts of ego development, Selman's model of role-taking, and Kegan's concepts of self-development; "a dynamic pattern of personal trust in and loyalty to a center or centers of value" (Fowler, 1981, p. 33), whose orientation can be understood in relationship to the person's trust in and loyalty to a core set of "images and realities of power" (Fowler, 1981, p. 33) and "to a shared master story or core story" (Fowler, 1981, pp. 31, 34; see also Fowler, 1996). Fowler's assumptions also show the influence of modern Protestant philosophical theology (especially Niebuhr, 1944; Tillich, 1957), and Wilfred Cantwell Smith's phenomenological, comparative, studies of religious traditions, practices, and communities (Fowler, 1981, 1996; see also, Day, 2010b).

Oser, who holds that all human beings think about their relationship with ultimate meaning, and the processes of nature and scope of the

universe, focuses on a more concise, and, empirically rigorous, vision of "religious judgment development," where ways of conceptualizing relationships between the person and God, or ultimate meanings and principles in the functioning of the world, are charted on a stage-scheme that ranges from states of ego-centrism, and cognitive dualism, toward more differentiated, elaborated, and complex appreciations of self, relationship, context, perspective-taking, and person-God interaction (Day, 2008a, 2008b, 2010b, 2013a, 2013b; Day & Naedts, 2006; Day & Youngman, 2003; Oser & Gmunder, 1991; Oser & Reich, 1996).

Oser and his colleagues use explicitly Piagetian terminology in arguing that there is a universal deep structure of religious cognition, reflecting the cognitive patterns that characterize an individual's ways of thinking about her or his relationship to the Ultimate, and the rules that govern that relationship. Oser and Gmunder (1991) and Oser and Reich (1996) argue that this deep structure is a universal feature of religious cognition across the life span, regardless of culture or religious affiliation. Avowed atheists and agnostics are held by Oser, Gmunder, Reich, and others (such as Kamminger and Rollett (1996) who have worked with Oser's model, to be concerned with fundamentally religious questions of relationship to ultimate being and purposes in their lives and in the life of the world, and to think about such questions in ways that fit their stage scheme of religious judgment (Kamminger & Rollett, 1996; Oser & Gmunder, 1991; Oser & Reich, 1996).

Fowler's conception approximates a general model of *meaning making* and the role religious concerns, beliefs, and practices play in shaping meaning in relationship to identity, the construction of values, and a sense of purpose in life from, and toward which, to develop. This fluidity between domains, and insistence on meaning making make Fowler's model rich, despite empirical problems, for the conceptualization of *spiritual* development among the increasing numbers of people who identify themselves as spiritual, but not religious, while remaining valid for many who belong to traditional faith communities. Oser's conception represents a more specifically religious orientation, insisting that in order to qualify as *religious*, the patterns of judgment studied using his model need to focus on participants' under-

standing of ultimate being, and its relationship to other factors in the working out of real-life, concrete problems in ways that can be observed and measured. (see also Day, 2002, 2007a, 2007b, 2008a, 2010b, 2013a; Day & Youngman, 2003).

Whether Fowler's and Oser's stages constitute "hard stages" in the Piagetian sense, or more flexible, malleable, and interpenetrating "soft stages," as Power (1991) insisted in appraising Fowler's model, has been much debated. Oser and colleagues (Kamminger & Rollett, 1996; Oser & Gmunder, 1991; Oser & Reich, 1996) argue that their model meets the criteria of "hard stages"(see also Vandenplas-Holper, 2003). Fowler has acknowledged the multifactorial, and more flexible, and more expansive definitions in his model and has observed that Oser's stages are more restrictive in terms of content and movement within the hierarchy of stages (see also Day, 2001, 2007a, 2008a, 2010b; Day & Youngman, 2003). Both models have generated theoretical work and practical innovations in theology, religious education, and pastoral counseling.

For Fowler and Oser and colleagues religious reasoning and spiritual meaning making include components of moral reasoning, and because people wrestle with moral dilemmas whether or not they are religious, or concerned with spiritual questions, moral judgment development, as described by Kohlberg, should precede faith and religious development, and upward stage movement in moral judgment should provoke similar movement on measures of faith and religious judgment (Fowler, 1981, 1996; Oser & Gmunder, 1991; Oser & Reich, 1996), a view shared by Kohlberg (1984). Empirical evidence, though, does not support the case made by Oser and Fowler as to the "direction" of effects between moral and religious considerations. Studies involving thousands of adolescents and adults have not shown a clear pattern of moral judgment's "precedence" to religious judgment. On their view, one would have expected to find moral judgment stage at levels equal to, and/or, mostly, higher than, faith development stage or religious judgment stage. Instead, there is a broad scattering of relationships: In some cases, moral judgment scores are higher than ones on religious judgment, in other cases the opposite is true. Mostly, one finds no statistically significant difference between the two, calling into

question the relationship between religious development and moral development assumed in Fowler's and Oser's models (Day, 2002, 2007a; Day & Naedts, 2006; Day & Youngman, 2003).

As I have observed elsewhere (Day, 2013a), both faith development theory, and religious judgment theory, explicitly allow for and anticipate development specific to adults, demonstrating, for example, that some kinds of faith and religious development could not occur where formal operations have not been achieved in cognitive development and problem-solving ability. Both explicitly consider the relationship between development, life experience, and learning in adulthood, and if one examines case examples and data in the two models, one sees how adults talk about growth in faith, religious judgment, or spiritual meaning making in terms of learning; for instance: "I learned I couldn't use the same old ways of thinking if I was to solve some of the problems that were before me" or

> When I was exposed to that person, I could see how their way of seeing things enabled them to do things I couldn't; they were just as faithful as I was, but they possessed a broader conception that allowed them to be much more effective, more tolerant, and less judgmental. Gradually, I learned to adopt a more flexible attitude, myself, and in so doing, learned I too could be just as religiously committed as I had been, without being as rigid as I had in fact often been towards other people and their experience of self and God. (Day, 2013a; see also Fowler, 1981, 1987, 1996; Oser et al., 2006; Reich et al., 1999; Streib & Hood, 2015)

The Model of Hierarchical Complexity

In the past decade, further theoretical and empirical elaborations of Piagetian questions and insights regarding religious and spiritual development, especially in adolescence and adulthood, using the model of hierarchical complexity (MHC) have appeared in leading handbooks (Day, 2013a); scholarly volumes in human development and religious and spiritual development (Day, 2013c); the psychology of religion (Day, 2013b); theology and religious studies (Day, 2014); and journals concerned with behavioral development (Toth-Gauthier & Day, 2015), adult development (Day, 2010a), cultural psychology, and the psychology of religion general, biological, and psychological evolution (Day, 2008a); and constructivist approaches in psychological science (Day & Jesus, 2013).

Following Commons and Pekker (2005), research using the MHC for conceptualizing and measuring religious and spiritual development in adulthood, grew out of frustration over several longstanding problems in other neo-Piagetian models, including

> A lack of *precision* plagues the *stage definitions* within the models, especially when it comes to *half-stages*, often characterized as *transitional* between stages.

> Stage logic in the models is inferred from observation, without clearly enough defining what constitutes, or should constitute, an increment in developmental movement, structural transformation, or hierarchical attainment.

> Without such clear conceptions of what qualifies as an increment in developmental movement or attainment, it is difficult to lay out, and measure, how to conceive of *higher order* performance.

> There is a problem of *horizontal decalage*, the problem of uneven performance across tasks by some individuals, again, throwing into question what qualifies as adequate stage definition.

> In addition to horizontal decalage, and related to it, is the problem of age-stage decalage. This problem has to do with those instances in which younger subjects sometimes perform with greater competence than they would be predicted to do in the models concerned, while some older ones perform less well than they "should" according to the models' logic. In such cases there is a *broader spread of competencies* in relationship to age and stage than we "should" expect in the models' conceptions of stage and their relationship to development across the life cycle.

> Piaget's supposition that *formal operations* should obtain by late adolescence has been unverifiable; some adolescents "make it" to formal operations, but many do not.

> On a related note, Piaget's model did not account for the prospect of *postformal operations*, and where post-Piagetian models have tried to do so, there has not been, at

least until very recently, a clear consensus among them as to how many have been found, and what their relationships are to one another, and to formal operations.

Finally, there has been a proliferation of stage models in a variety of domains (ego development, parental development, aesthetic development, emotional development, role-taking development, identity development, intellectual development, moral and religious development) with no clear explication of how models are, or ought to be, related across domains. (Commons & Pekker, 2005; Day, 2008a, 2010b, 2010c, 2013a).

The MHC seemed to us to offer a promising way of modeling development, one that preserves and demonstrates evidence for the central insights of Piaget's theory and provides rigorous and robust empirical evidence to support it. It is effective as a descriptive and empirically verifiable model of development *across* domains, and effectively addresses the problems identified in the preceding paragraphs associated with neo-Piagetian models in the psychology of religious and spiritual development and their relationships to moral development.

Commons and Pekker (2005), elaborating initial work in Commons and Richards (1984), showed the MHC's utility for scoring reasoning stages in any domain as well as in any cultural setting. Scoring of stage is based not upon the content or the subject material, but instead on the mathematically calculated complexity of hierarchical organization of information in items, and problem-solving tasks. A given subject's performance on a given task at a given level of complexity represents the stage of developmental complexity the subject can use in a given domain.

The MHC is rooted in what Commons and Richards (1984) call a theory of general stage development, describing a sequence of hard stages varying only in their degrees of hierarchical complexity, relying on empirical studies in which 15 stages have been validated. Commons and Richards show, as do subsequent studies, how Piaget's stages and substages of cognitive development are validated and find a place in their stage scheme.

As I have observed elsewhere (Day, 2013a; Toth-Gauthier & Day, 2015), arbitrariness in stage definition, a common critique of other stage theories and models, is addressed in the MHC by its grounding in mathematical models, benefiting from the use of Rasch scaling analysis Wright and Masters, 1984, which analyzes items in terms of their relative complexity, and allows researchers to establish clear increments across levels of complexity. This enables researchers to establish hierarchical sets of tasks whose order of complexity can be clearly formulated, measured, and compared, both within domains and across them. Rasch analysis permits researchers to construct items for scales of stage complexity and to measure the merits of their statements at any given interval of stage they wish to assess, with immediate feedback from Rasch scaling as to whether their proposed item fits the criteria for increase in complexity over the previously constructed item. Thus, the MHC, in association with Rasch analysis, has permitted researchers to test Piaget's conceptual order of stages, and the concrete forms of the stage structures he proposed, allowing us the rigorous empirical validation of Piaget's basic conceptions of stage and structure, and of stage order, and universality.

The MHC is particularly powerful for understanding adult psychological development describing and validating four postformal stages (Commons & Richards, 2003). Thus, the MHC helps us appreciate that there *are* postformal stages, and provides tools for understanding and promoting competence in cognition in situations of complex problem solving in adult life. Because it is effective for understanding how cognition develops across domains, the MHC helps us understand why and how cognitive competence may develop in some domains, but not other domains in adulthood.

The MHC has also proven useful in the psychology of religious and spiritual development, allowing for the charting of stages in cognition involving religiously related problem-solving scenarios, and permitting researchers to respond to some questions and controversies in the field (Day, 2008a, 2008b, 2009, 2010b, 2013a, 2013b, 2013c; 2014; Day, Commons, Bett, & Richardson, 2007; Day, Richardson, & Commons, 2009; Ost et al., 2007; Toth-Gauthier & Day, 2015).

These studies employ a valid and reliable measure called the Religious Cognition Questionnaire (RCQ; Day, 2007a) and have demonstrated the utility of the MHC in establishing stages of religious cognition, and showing relationships between religious cognition stages in the MHC and religious judgment stages in Oser's model—for example, that Oser's stage model respects the criteria for Piagetian "hard stages," but that the stages in the Oser model are not the same as what the MHC can measure in cognitive complexity using the RCQ. The MHC has, as in other domains, allowed us to describe and demonstrate the existence of postformal thought in religious cognition, and has allowed for greater precision in comparing religious cognition and moral cognition. Using the MHC, we have been able to better appreciate how people manage varying degrees of complexity in moral problem solving when elements of religious belief, belonging, and authority are entered into the moral scenario; including the question whether people of religious conviction are prepared to abandon complexity in favor of religious authority when solving moral problems (Day, Commons, Ost, & Bett, 2007; Day, 2008a, 2008b; Day, 2009, 2010b, 2013a, 2013b; Day, Richardson, & Commons, 2009; Toth-Gauthier & Day, 2015). The RCQ has been used, with equal success and comparable stage distributions, in studies involving hundreds adolescent and adult participants, with agnostics, Buddhists, Jews, and Muslims, Roman Catholic, Anglican, and Protestant subjects in Belgium, England, France, and the United States.

Research using the RCQ has proven particularly relevant to thinking about stage and structure, and operations within religious cognition, and across domains, with religious subjects, in adolescence and *adulthood*, including particular attention to postformal cognition, responding to Cartwright's (2001) and Sinnott's (1994) concerns that studies of religious and spiritual development have not sufficiently taken postformal cognition into account in what becomes defined as spirituality in adult life, and Sinnott's insistence that research paradigms should in the future make explicit links between postformal cognition and postformal stages in religious and spiritual development.

I have demonstrated that there are postformal stages in religious cognition that are parallel to the four postformal stages outlined by Commons and Richards (2003). I have also shown that people reasoning at postformal levels are less likely than others to abandon their highest level of achieved complexity in problem solving in other domains when elements of religious authority enter into problem solving situations, an important response to the debate whether religious commitment and priming contributes to the "dumbing down" of people's use and management of complexity in other domains, including the resolution of moral dilemmas (Day, 2008a, 2010b; Day, 2013a, 2013b, 2013c, 2014; Day et al., 2007, 2009, 2010a).

Religion and Development in Adulthood

This article has reviewed the relevant literature in psychological science on religion and adult development, with particular attention to well-being, prosocial and antisocial behavior, and religious and spiritual development, including stages of development specific to adulthood. In speaking of development, I have largely confined our review to models within the *cognitive-developmental* tradition. These are not the only models, and readers would do well to consider the role of attachment theory and research, object relations, narrative, depth psychology, and dialogical/discursive models in thinking about, and nurturing, positive development in adulthood. More exhaustive considerations of these models, and their relationship to learning in adulthood, can be found elsewhere (e.g., Brandt & Day, 2013; Day, 2013a, 2014; Day & Jesus, 2013; Kalsched, 2013; Robinson, 2013).

As William James (1902) observed more than a century ago, in his still monumentally influential volume *The Varieties of Religious Experience*, religious and spiritual experience is lived by those who claim it as centrally important; vital to what it means to have purpose, direction, moral orientation, and meaning, in life, and, as researchers such as Day (2011) distinct from other kinds of experience. How religion, religiosity, spirituality, and development interact, across the life cycle, is—and will remain—a vital topic for researchers in psychological science, and concerned with quality of life in adulthood, for many years to come.

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