

CATEGORICAL ORGANIZATION OF NUMINOUS
CONSTRUCTS, BASIC PSYCHOLOGICAL NEED
FULFILLMENT, AND PSYCHOLOGICAL OUTCOMES: A
MODERATED MEDIATION MODEL

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CATEGORICAL ORGANIZATION OF NUMINOUS
CONSTRUCTS, BASIC PSYCHOLOGICAL NEED
FULFILLMENT, AND POSITIVE PSYCHOLOGICAL
OUTCOMES: A MODERATED MEDIATION MODEL

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Lao Tzu, one of the founders of Taoism, stated that “a journey of a thousand miles begins with a single step”. Finishing a dissertation indeed feels like a journey of a thousand miles, and throughout this journey there have been moments of inspiration, disenchantment, and even outright exhaustion. Throughout this process I have witnessed the transformation of my being, a re-orientation toward the process of constructing knowledge, and a sense of awe for the seemingly inherent complexity of the human condition. Ironically, I started graduate school expecting to develop a coherent and well thought out perspective, only to recognize that upon completing my dissertation I have more questions than answers. This recognition serves as an incessant reminder that my personal quest to apprehend the meaning of being has only yet begun. Thankfully, this journey is not an individualistic pursuit. Instead, education for transformation is a relational endeavor. I am genuinely grateful to the numerous people who have shaped my academic experiences.

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CHAPTER I

INTRODUCTION

If there is some end of the things we do, which we desire for its own sake...clearly this must be the good and the chief good. Will not knowledge of it, then, have a great influence on life? Shall we not, like archers who have a mark to aim at it, be more likely to hit upon what we should? If so, we must try, in outline at least, to determine what it is...

--Aristotle, Nichomachean Ethics (I. 1094a 18).

In recent decades efforts to understand the observed association between health related outcomes and numinous constructs has drastically increased. Within the current study numinous constructs are defined as measures pertaining to either religiosity or spirituality. Weaver, Pargament, Flannelly, and Oppenheimer (2006) reported in a literature search using PsycINFO a total 1,100,300 articles published between 1965 and 2000 when using combinations of the keywords “religion,” “spirituality,” and “health”. In my own search within MEDLINE 2,801 articles were found using the key words “spirituality” and “health” from 2000 to 2011 and 5,410 articles resulted from entering the key words “religion” and “health” between these same years. Counselors, epidemiologists, medical practitioners, psychologists, and the media appear to embody a growing interest in how numinous constructs may either facilitate or impair human functioning (Burkhardt, 2011; Dye, 2010; Nichols & Hunt, 2011; Plante & Sharma, 2001; Warner, 2007; Worthington, et al., 1996). This expansion in academic interest may serve

to rectify numerous decades of relative neglect by the academic community; nevertheless, this increase in attention has not been accompanied by an equivalent rise in theoretical clarity. Efforts to understand the association between religiosity/spirituality and positive psychological outcomes face numerous methodological and practical problems (Sloan, 2006), and it has remained challenging to disentangle the potential contribution of religiosity/spirituality from other related variables. Such problems in part arise from the difficulty in deriving scientifically useful conceptualizations of numinous constructs (Koenig, 2008). Despite such concerns, many researchers agree that small to moderate correlations exist among numinous constructs and a range of health related outcomes (Koenig, McCullough, & Larson, 2001; Powell, Shahabi, & Thoresn, 2003). Accordingly, the central task in recent years has been the explication of psychological, physiological, and behavioral mechanisms underlying observed associations.

The present study is not concerned with the implications of religiosity/spirituality on physical health outcomes, or with the possibility that these constructs may be detrimental to human functioning. These are worthy research questions in and of themselves; yet, the present study is solely focused upon proposed pathways from religiosity/spirituality to positive psychological outcomes. Just as numinous constructs are multidimensional (Hill & Hood, 1999; Idler et al., 2003), in an analogous way perspectives toward positive psychological functioning are informed by distinct philosophical worldviews (Ryff & Singer, 2008; Haybron, 2008). Positive psychological outcomes are broadly conceived as both subjective well-being (Kahneman, Diener, & Schwarz, 1999) and outcomes associated with eudaimonic living (Deci & Ryan, 2001). Subjective well-being is typically characterized by two components, the first of which is referred to as happiness and consists of the overall balance of positive over negative affective states (Kahneman, Diener, & Schwarz, 1999). The second component of subjective well-being consists of a cognitive evaluation of one's overall satisfaction with life (Diener, 1984). The perspective employed by subjective well-being researchers takes as its starting point the idiographic evaluation of each individual. This stands in contrast with

the eudaimonic perspective (Ryff, 1989, 1998; Deci & Ryan, 2001) that views well-being as the result of living in accordance with one's daimon, or true self (Waterman, 1993). This perspective, which tends to be heavily influenced by Aristotle's *Nichomachean Ethics*, makes a distinction between the subjective state of being happy and having a life that is "well-lived". To live well is conceived as living in accordance with, and in direct facilitation of, human potentiality. The constituents of this potentiality, and/or daimon, are obviously contestable; nonetheless, the present study contends that the framework set forth by self-determination theory (Ryan, 1995) may be useful for explaining the observed association between religiosity/spirituality and positive psychological outcomes.

Background of the Problem

The investigation of religiosity/spirituality and health related outcomes, though largely receding for numerous decades in the early to mid-20th Century, literally dates back well over one hundred years (James, 1902/2008; Osler, 1910). In recent years the possibility that numinous constructs may contribute to positive human functioning has captured the interest of academicians from several disciplines (Hill & Pargament, 2003). Numerous empirical studies have indicated that religiosity/spirituality have small to moderate correlations with physical and mental health (Powell, Shahabi, & Thoresen, 2003), as well as measures of positive psychological outcomes (Myers, 2008; Pollner, 1989). Though such relationships are not typically large (Wittrier, Stock, Okun, & Haring, 1985), they do emerge relatively consistently across a range of studies (Green & Elliott, 2010; Koenig & McCullough, 2001; Myers, 2000; Plante & Sherman, 2001). For example, not only are those who are strongly committed to their faith nearly twice as likely to report being very happy as those who are least committed (Myers, 2008), but an analysis across 24 years of General Social Survey data found that church attendance and perceived closeness to God were significant predictors of subjective well-being even when controlling for a range of demographic variables (Stark & Maier, 2008). Cross-sectional data indicates similar findings across numerous countries outside of the United States (Abdel-Khalek, 2006, 2010; Roemer, 2010; Swinyard, Kau, Phua, 2001; WHO, 1982). In addition to

cross-sectional analyses, which may be criticized for a failure to control for possible selection effects, an examination of panel data in Germany found that differences in church attendance across a five-year period predicted changes in life satisfaction (Headey, Schupp, Tucci, & Wagner, 2010). Though Headey and colleagues failed to examine whether changes in life satisfaction predicted changes in church attendance, these findings allude to the possibility that something inherent within religiosity/spirituality may be conducive to positive psychological outcomes.

This seemingly consistent finding has not gone without empirical discrepancies (Bergin, 1983; Brown & Tierney, 2009; Gee & Veevers, 1990; Sloan & Bagiella, 2002; Wink & Dillon, 2008). For example, evidence indicates that individuals with moderate religious beliefs have lower subjective well-being than their non-affiliated counterparts (Mochon, Norton, & Ariely, 2011), whereas other research has indicated that the correlation between religiosity and life satisfaction, though statistically significant in the United States, failed to be statistically significant among Dutch and Danish samples (Snoep, 2008). Integrating such inconsistencies remains challenging given the numerous ways to conceptualize numinous constructs and positive psychological outcomes. It is not safe to assume that the magnitude of observed correlations will remain consistent across distinct measures of religiosity/spirituality (Worthington, et al., 1996), nor across diverse populations (Swinyard, Kau, Phua, 2001). One meta-analysis for example, found among 34 studies that the average effect size significantly varied across distinct measures of numinous constructs (Hackney & Sanders, 2003). Despite several discordant findings however, many researchers agree that there is a relationship between religiosity/spirituality and positive psychological outcomes (Plante & Sharma, 2001). Some skepticism remains in order however (Thoresen, Oman, & Harris, 2001), given that many questions remain unanswered about the conditions under which observed relationships are either moderated, mediated, or confounded by other variables (Diener, 2009). Despite many efforts to explain the association between religiosity/spirituality and positive psychological outcomes, a failure to account for multidimensional elements of numinous constructs (Hill & Hood, 1999; Idler et

al., 2003) can lead to erroneous conclusions about the proposed pathways through which such effects are presumed to occur. A consideration of this complexity has the potential to expose systematic variation in the extent to which proposed paths to positive psychological outcomes are manifest.

Statement of the Problem

Numerous pathways have been proposed in order to explain the observed correlations between religiosity/spirituality and positive psychological outcomes. These mechanisms include social support, purpose in life, hope, perceived control, and numerous other variables (Argyle, 1999; Blaine & Crocker, 1995; Ellison, 1991; Sethi & Seligman, 1994; Myers, 2008). Many studies aimed at identifying pathways from religiosity/spirituality to positive psychological outcomes are susceptible to criticisms targeting similar research in medical journals, such as a failure to control for increases in Type I error when conducting multiple comparisons (Sloan, Bagiella, & Powell, 1999). Aside from such criticisms however, there are two additional problems that this study aims to address, each of which will be discussed in turn. First is the apparent dearth of theoretical guidance in the specification of mediating variables. Without a strong a priori theoretical framework model specification aimed to understand observed covariance structures appear to be little more than statistical exercises. Secondly, much of this research has employed limited, and at times ambiguous, conceptualizations of religiosity/spirituality. To illustrate this point, it is common for researchers to solely focus upon the numinous as broad-band individual difference variables (e.g. strength of faith) or self-reports of religious behavior (Hill & Pargament, 2003). An exclusive focus upon such variables fails to consider that individuals may be practically equivalent in their disposition toward the numinous, yet diverge in the expression and/or experience of their religious and/or spiritual reality (Tsang & McCullough, 2003).

Much research within this area is largely empirically driven, as opposed to being guided by a strong theoretical rationale. In other words, “notwithstanding theological writings that provide

examples of how these constructs may be related...it is unclear from a psychological perspective how and why these constructs should be related” (Lewis & Cruise, 2006, p. 221). This lack of theoretical guidance leads to uncertainty in the specification of confounding versus mediating variables in statistical models (Miller & Thoresen, 2003; Sloan, Bagiella, & Powell, 2001). A confounding variable may be correlated to both religiosity/spirituality and positive health outcomes, thus masking the size of an existent relationship. A confounding variable is therefore not a causal variable aimed at explaining the pathway from religiosity/spirituality to such outcomes. For example, if education were related to religiosity and positive psychological outcomes, a failure to control for education may overestimate the true relationship among these constructs. It seems unlikely, though perhaps technically possible, that religiosity causes education, which in turn causes positive psychological outcomes. A mediation hypothesis decomposes an observed correlation into two causal pathways, one of which is proposed to travel through the mediating variable. Given that models hypothesizing a variable as having a confounding or mediating effect are equivalent from a statistical perspective (MacKinnon, Krull, & Lockwood, 2000), guidance in model specification must come from theoretical conjecture. As articulated below, the present study proposes that self-determination theory (Deci & Ryan, 2000) provides one theoretical framework for the specification of statistical models aiming to elucidate the pathways from religiosity/spirituality to positive psychological outcomes.

The second criticism pertains to both the conceptual ambiguity in the operationalization of religiosity/spirituality and the tendency to focus upon broad-band individual difference variables in statistical models. The observed correlation between religiosity/spirituality and positive health outcomes is in part a function of the way in which numinous constructs are measured (Worthington et al., 1996). A recent meta-analysis found that average effect sizes varied “as one proceeds from institutional religiosity to ideology to personal devotions” (Hackney & Sanders, 2003, p. 51). A failure to consider the multidimensional aspects of religiosity/spirituality (Hill & Hood, 1999; Idler et al., 2003) consequently obscures our understanding observed covariance structures. Numinous

constructs not only vary in their dimensionality, but may also vary across levels of analysis. Emmons and Paloutzian (2003) were the first to propose a new multilevel interdisciplinary paradigm in the study of numinous constructs. Under this view, religiosity/spirituality may be conceived at multiple layers of reality, which may include among others the sociological, psychological, and physiological. Recent work has suggested however, that even within the psychological layer, multiple elements may exist. This was first proposed by Tsang and McCullough (2003), and later elaborated upon by Hill (2005), who adopts what they label as a hierarchical approach toward measures commonly employed within the psychology of religion. This view divides these measures into two levels. Level I measures refer to *substantive* religiosity/spirituality. Substantive measures are generally concerned with a broad-disposition, or individual difference variable that is analogous to personality. More specifically, substantive measures aim to ascertain the extent to which an individual is religious and/or spiritual. Level II is viewed at an operational level and these measures are concerned with assessing the *functional* aspects of the numinous. Functional measures aim to understand the extent to which individuals exhibit diversity in the expression, experiences, and appropriation of a religious reality. Two individuals may hence be equally committed to their religious beliefs (i.e. substantive religiosity/spirituality), yet differ in the maturity with which such beliefs are held (i.e. functional religiosity/spirituality). The preponderance of research has investigated the association between substantive numinous indicators and positive psychological outcomes. As a result, such investigations neglect the functional aspects of the numinous that may contribute to understanding differences in the degree to which proposed paths to positive psychological outcomes are undertaken.

In summary, many studies have focused solely upon the relationship between substantive religiosity/spirituality and positive psychological outcomes. Efforts to account for observed relationships have specified synonymous constructs as both confounding and mediating variables. Given the statistical equivalence of such hypotheses, the specification of statistical models would be aided by enhanced theoretical precision. Finally, efforts to explain pathways from measures of

substantive religiosity/spirituality to positive psychological outcomes has neglected the possibility that numinous constructs themselves may contribute to understanding variation in the extent to which specific pathways to positive psychological outcomes are utilized. In other words, variation in functional religiosity/spirituality may moderate the extent to which specific pathways to positive psychological outcomes are manifest. The present study argues that self-determination theory provides a theoretical rationale for the specification of pathways from substantive religiosity/spirituality indicators to positive psychological outcomes. The indirect effect of substantive religiosity/spirituality to positive psychological outcomes however, is anticipated to be moderated by functional aspects of the numinous.

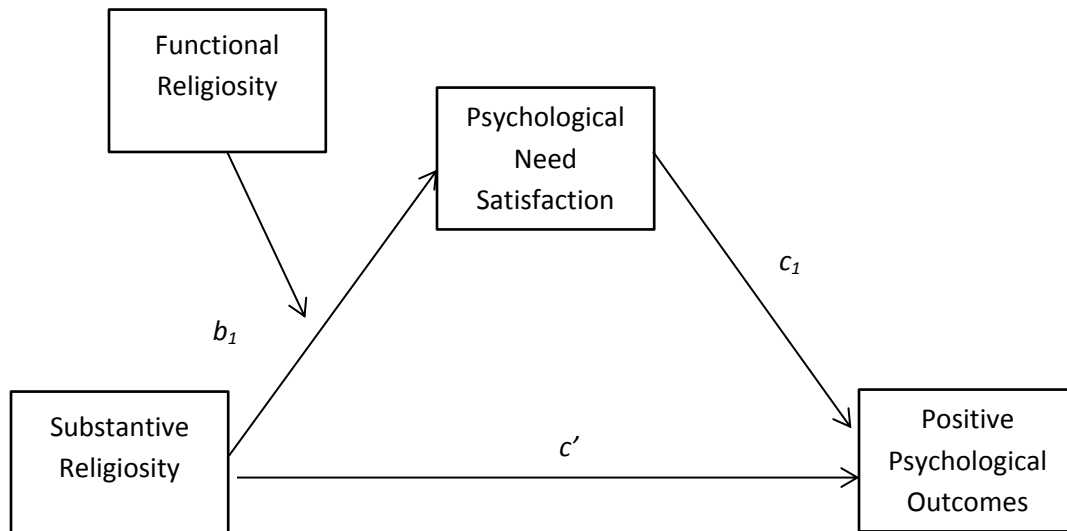
Purpose of the Study

Research investigating the relationship between religiosity/spirituality and positive psychological outcomes has tended to operationalize religiosity/spirituality at either a broad dispositional level that indicates the extent to which an individual is religious/spiritual or behavioral self-reports of religious activity. Though numerous rationales have been given to explain this association (Argyle, 1999; Blaine & Crocker, 1995; Ellison, 1991; Myers, 2008; Sethi & Seligman, 1994) deficiency in theory leads to obscurity in model specification of third variable effects. This ambiguity is also problematized by the operationalization of numinous variables (Kapusinski & Masters, 2010; Koenig, 2008) and a general failure to consider that religiosity/spirituality may itself contribute to this understanding. This situation may in part be rectified through reliance upon theory in model specification, coupled with a continuous striving for scientific rigor in the empirical explication of numinous constructs. The present study suggests that self-determination theory (Deci & Ryan, 2008a; Ryan, 1995), in addition to an approach toward the categorization of numinous constructs that is aligned with the multilevel interdisciplinary paradigm (Emmons & Paloutzian, 2003; Hill, 2005), is a first step toward this rectification. From this framework specific predictions

are derived that may illuminate our understanding the often observed zero-order correlations between substantive religiosity/spirituality and positive psychological outcomes (see Figure 1).

Figure 1

Path Model Depicting the Theoretical Framework Guiding the Present Study



Note. Substantive religiosity indicates the extent to which individual is religious/spiritual. Functional religiosity is characterized by variation in the expression/experience of a religious reality. The present model utilizes self-determination theory to specify that the indirect effect from substantive religiosity to positive psychological outcomes is mediated by psychological needs [i.e. (b_1) (c_1)]. However, it is also predicted that measures of functional religiosity will moderate b_1 . Functional religiosity is not anticipated to moderate c_1 given the claim that psychological needs are universal.

Proposals by self-determination theorists (Ryan, 1995; Deci & Ryan, 2001) suggest that the effect of substantive religiosity/spirituality on positive psychological outcomes is mediated by the satisfaction of three basic psychological needs. This includes the need for autonomy, relatedness, and competence. However, consideration of the multidimensional nature of religiosity/spirituality (Hill & Hood, 1999) yields the possibility that specific parameters of the mediation model may be moderated by functional aspects of the numinous (Hill, 2005). The eudaimonic conception of well-being set forth by self-determination theory proposes that living in accordance with one's true self (Waterman,

1993) is to live in accordance with these basic psychological needs (Deci & Ryan, 2008a). Given that basic psychological needs are hypothesized to be universal (Deci & Vansteenkiste, 2004) it is anticipated that the degree to which these needs are believed to be satisfied should have a constant effect on positive psychological outcomes, irrespective of variation in indicators of functional religiosity/spirituality. Variation in functional indicators however, is expected to be important in understanding the relationship between substantive religiosity and the degree to which basic psychological needs are believed to be satisfied. In other words, functional aspects of the numinous are predicted to moderate the effect of substantive religiosity/spirituality on basic psychological needs. It is therefore the primary aim of the present study to investigate this moderated mediation hypothesis.

Research Questions

Several research questions are central to the present study. These research questions are broadly outlined below. A specific operationalization of these questions (e.g. measures of functional and substantive religiosity) is provided in subsequent chapters. Of primary concern to the present study is the moderated mediation hypothesis wherein the mediated effect of substantive religiosity on positive psychological outcomes is moderated by measures of functional religiosity. Stated differently, it is first proposed that basic psychological need fulfillment mediates the effect of substantive religiosity on positive psychological outcomes. The size of this indirect effect will be hypothesized to vary across levels of functional religiosity. Investigation of the moderated mediation hypothesis is therefore contingent upon evidence that the effect of substantive religiosity on positive psychological outcomes is mediated by basic psychological needs. The present study will thus first investigate the zero-order correlations among the study variables, followed by an examination of the mediation hypothesis. Interaction terms relevant to the moderated mediation model will then be included in the statistical model. If significant interactions effects are found, follow-up tests will be

conducted to examine the conditional indirect effects for specified values of functional religiosity and the specific values of functional religiosity for which indirect effects remain statistically significant.

1. What are the zero-order correlations are between indicators of substantive religiosity, functional religiosity, basic psychological needs, and positive psychological outcomes?
2. Is the effect of substantive religiosity on positive psychological outcomes mediated by basic psychological needs?
3. Is there a statistically significant interaction between substantive religiosity and functional religiosity when predicting perceived basic psychological need fulfillment?
4. Is there a statistically significant interaction between functional religiosity and basic psychological needs when predicting positive psychological outcomes?
5. If a significant interaction is found, what are the estimated conditional indirect effects of substantive religiosity on positive psychological outcomes at specified values of functional religiosity?
6. At what values of functional religiosity do estimated indirect effects remain statistically significant?

Definitions

Autonomy - “refers to volition, to having the experience of choice, to endorsing one’s action at the highest level of reflection” (Ryan, Huta, Deci, 2006, p. 153).

Basic psychological need – an energized state that, if satisfied is conducive to health and well-being and if thwarted contributes to pathology and ill-being (Deci & Ryan, 2000).

Competence – feeling efficacious over internal and external forces (Ryan, Huta, & Deci, 2008).

Eudaimonic well-being – this consists of living in accordance with one’s true self, or daimon (Waterman, 1993). According to this approach, well-being is conceived as living in accordance with human potentiality (Deci & Ryan, 2008a).

Functional religiosity/spirituality – categorization of the numinous at an operational level, wherein individuals exhibit diversity in the expression, experience, and appropriation of religious reality.

Numinous constructs – this is broadly conceived as both religiosity and spirituality.

Positive psychological outcomes – this is broadly conceived as both subjective-well being and outcomes associated with eudaimonic well-being.

Relatedness – a sense of connection derived from interaction with other people.

Religiosity – the feelings, thoughts, experiences, and behaviors that arise from a search for significance in ways related to the sacred or transcendent; AND the means and methods (e.g. rituals, prescribed behaviors, tenets, etc.) emanate from a traditional sacred context.

Spirituality – the feelings, thoughts, and experiences, that arise from a search for the sacred or transcendent.

Subjective well-being – this consists of two components. The first is a hedonic component that refers to the overall balance of positive over negative affect (Kahneman, et al., 1999). The second is a cognitive component and consists of an individual’s overall judgment about life satisfaction (Diener, 1984).

Substantive religiosity/spirituality – broad inter-individual differences in dispositions toward the numinous.

CHAPTER II

LITERATURE REVIEW

Once we attend to interactions, we enter a hall of mirrors that extends to infinity.

--Cronbach (1975, p. 119)

The scientific investigation of the relationship between numinous constructs and health related outcomes literally dates back well over one hundred years (Koenig & McCullough, 2001). Early 20th century scholars from numerous academic disciplines gave rich accounts of the human propensity toward the numinous (Durkheim, 1916; Freud, 1928; Jung, 1938; Osler, 1910). These early advancements however, largely waned for numerous decades (Gorsuch, 1988); only to be revitalized as various scholars have come to view the secularization thesis (Swatos & Christiano, 1999) as problematic. Contrary to the secularization thesis, it does not appear that scientific and technological advancement has been accompanied by an abandonment of the numinous for many individuals (Gallup, 2010). Religious and spiritual worldviews entail a cognitive framework for structuring subsequent experience (McIntosh, 1995; Parks, 2005), and the underlying form of this meaning is not without practical consequence. The social sciences, though restricted to approaching the numinous through empirical observation (Gorsuch, 2002), remains dedicated to the construction of theoretical accounts that explain the implications of religious and spiritual meaning. Within the context of health related outcomes, investigating the implications of

religious and spiritual meaning extends beyond a zero-sum game given that these meaning systems may both facilitate and inhibit positive human functioning (Allport, 1950; James, 1902; Juergensmeyer, 2006). Resolving such paradoxes is an insurmountable task within a single study, thus the current investigation is solely focused upon a growing conclusion among many scholars that religious and/or spiritual meaning systems facilitate positive human functioning. More specifically, the present study aims to evaluate the association between numinous constructs and positive psychological outcomes.

Numerous studies have documented small to moderate correlations between numinous constructs and physical health (Powell, Shahabi, & Thoresen, 2003), mental health, and positive psychological outcomes (Pollner, 1989). In fact some researchers have posited that the implications of religious and spiritual meaning systems on positive psychological outcomes may be one path through which numinous constructs influence physical health (Lee & Newberg, 2005; Oman & Thoresen, 2005). Positive psychological outcomes may be considered a dependent variable in its own right, and as previously implied the consequence of religious and spiritual meaning systems upon such outcomes is not homogenous. For example there is strong evidence to indicate that numinous constructs are positively related to a range of positive psychological outcomes (Koenig & McCullough, 2001), including self-esteem (Plante and Boccaccini, 1997), optimism (Sherman, et al., 2001), and numerous measures of psychological well-being (Allen & Heppner, 2011). Weekly church attenders and individuals who view their faith as being integral to their life tend to be happier than those who attended church less or who do not view their faith as being highly integral to their life (Myers, 2008). An analysis of 24 years of general social survey data also indicates that church attendance and viewing oneself as being closely related to God is positively correlated with happiness even when controlling for a range of demographic characteristics (Stark & Maier, 2008). Though a majority of studies suggest that numinous variables are related to positive psychological outcomes (Plante & Sherman, 2001) this evidence is not always consistent, given that other studies have failed to support these findings (e.g. Diener & Seligman, 2002; Levin, 1997; Lewis, 2002; Lewis, Joseph, & Noble, 1996) or suggest that such associations disappear

when controlling for other relevant variables (Burris, Brechting, Salsman, & Carlson, 2009; Francis, Ziebertz, & Lewis, 2003; Robbins, Francis, & Edwards, 2008). Such inconsistencies, though admittedly perplexing to conceptually integrate, underscore a need to recognize heterogeneity in the conditions under which the magnitudes of observed correlations may vary (Diener, 2009).

Efforts to integrate these inconsistencies are generally lacking in two fundamental respects. First, the treatment of third variable effects in explaining this association is often conducted without a priori theoretical specification (Lewis & Cruise, 2006; Miller & Thoresen, 2003; Sloan, Bagiella, & Powell, 2001). Statistical criteria alone cannot differentiate between a confounding and mediating effect (MacKinnon, Krull, & Lockwood, 2000). Independent researchers often conceive of similar variables in relatively distinct ways, thus leading to ambiguity in model specification. For example, social support, optimism, and purpose in life are viewed as both mediating and confounding variables by different researchers (Argyle, 1999; Blaine & Crocker, 1995; Ellison, 1991; Levin, Markides, & Ray, 1996; Myers, 2008; Salsman, Brown, Brechting, & Carlson, 2005). Though these efforts reflect a positive step toward elucidating observed correlations between numinous constructs and positive psychological outcomes, stronger theoretical guidance is needed in the specification of statistical models. Secondly, across a range of studies numinous variables are either poorly conceived or are operationalized in ways that inadequately represent the breadth of this construct. Many researchers confound numinous measures with other psychological constructs (Moreira-Almeida & Koenig, 2006) or treat religiosity and spirituality as only minor variables (Hill & Pargament, 2003; Sloan & Bagiella, 2002) that are measured by single item indicators. These problems neglect the multidimensional elements of numinous constructs (Idler et al., 2003; Astin, Astin, & Lindholm, 2011), and disregard the possibility that specific aspects of religiosity and spirituality may contribute to understanding observed correlations.

The relationship between numinous variables and positive psychological outcomes is complex, and the observed patterns in correlations across this line of research are not easily explained. Some clarity may be provided however, by drawing upon theory for model specification. Self-determination theory

(Ryan, 1995), coupled with the multilevel interdisciplinary paradigm for categorizing numinous constructs (Emmons & Paloutzian, 2003) allows for specific predictions that may aid in this understanding. Proponents of self-determination theory (Deci & Ryan, 2001) hypothesize that positive psychological outcomes are manifest through living in accordance with three basic psychological needs, which include the need for autonomy, relatedness, and competence. Observed correlations between numinous variables and positive psychological outcomes may therefore be explained by the fulfillment of each of these needs within the religious/spiritual domain. Many previous studies have operationalized numinous constructs as broad-band individual difference variables reflecting the extent to which an individual may be religious and/or spiritual. The multilevel interdisciplinary paradigm for conceptualizing numinous constructs (Emmons & Paloutzian, 2003) proposes that individuals may be equivalent at this broad level of analysis, yet radically depart in the expression of a religious or spiritual reality (Hill, 2005). In other words, though self-determination theory provides a theoretical argument for the existence of particular paths to positive psychological outcomes it cannot be assumed that such paths are equally utilized among individuals of a similar level of religiosity/spirituality. In other words, the multilevel interdisciplinary paradigm provides a rationale for anticipating that the mediation hypotheses inferred from self-determination theory may be moderated by functional aspects of the numinous.

Before presenting the moderated mediation hypothesis investigated by the present study, this chapter will first highlight the intricate, and often nuanced, challenges facing efforts to demarcate the numinous from the seemingly mundane. This leads to a working definition of religiosity and spirituality, which will be followed with a review of a categorical classification of numinous constructs (Hill, 2005; Tsang & McCullough, 2003) aligned with multilevel interdisciplinary paradigm (Emmons & Paloutzian, 2003). Two conceptions of positive human functioning will then be examined, which include subjective well-being (Eid & Larsen, 2008) and the eudaimonic perspective towards well-being (Ryff, 1998; Waterman, 1993). It is this latter perspective that is adopted within the current study, with a particular emphasis on the proposals set forth by proponents of self-determination theory (Deci & Ryan, 2008a).

From self-determination theory specific predictions can be inferred about possible mediators from numinous variables to positive psychological outcomes. It is predicted that the effect of substantive numinous measures on positive psychological outcomes is mediated by the fulfillment of three basic psychological needs. These needs include autonomy, relatedness, and competence. To keep the analysis manageable autonomy will be investigated as a mediating variable to two positive psychological outcomes, which include life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985) and meaning in life (Steger, Frazier, Oishi, & Kaler, 2006). The multilevel interdisciplinary paradigm for conceptualizing numinous constructs (Emmons & Paloutzian, 2003) proposes that individuals may be equivalent at this substantive level of the numinous, yet vary in the functional manifestation of numinous constructs (Hill, 2005). In other words, though self-determination theory provides a theoretical argument for the existence of particular paths to positive psychological outcomes it cannot be assumed that such paths are equally manifest among individuals who are similar in their expressed level of religiosity or spirituality. This section will present faith development theory, as articulated by Fowler (1981) as a moderating variable of the simple mediation hypothesis inferred from self-determination theory. This section concludes with an overview of the moderated mediation hypothesis guiding the present study.

Demarcating the Numinous and Mundane

Investigating the extent to which an individual is religious and/or spiritual is a cumbersome, yet central task when undertaking an empirical investigation of numinous constructs. Not only is the articulation of these demarcations important for establishing the boundaries among various academic disciplines (Harrison, 2006; Molendijk, 1999; Wulff, 1997), but choices in the operationalization of numinous constructs can lead to empirical confusion and ambiguity (Koenig, 2008). A brief consideration of the following statistics illustrates the complexity underlying an empirical explication of the numinous. Participation in formal religious activities appears to be actively declining in Western European countries (Altemeyer, 2004). A recent Gallup poll (2007) indicates that 30% of individuals sampled in France and only 24% of individuals in the United Kingdom indicated that religion was an

important part of their daily life. According to a 2005 European Union (EU) report however, 52% of EU citizens maintain an active belief in God and an additional 27% report a belief in some sort of spirit or life force. Interestingly, this same report indicates that 71% of citizens in the United Kingdom and 71% of the French either actively believe in God or some spiritual life force. American respondents, though seemingly more religious than their European counterparts, display a similar pattern of results. While only 43% of Americans report attending church on a weekly or almost weekly basis, about 92% indicated that they believe in God or some universal spirit (Gallup, 2010, 2011). This pattern suggests that participation in formal religious activities is at best a quasi-indicator of the extent to which an individual may view themselves as either religious or spiritual. More important however, is that such findings implicate a growing need to recognize an emerging distinction in Western consciousness about the meaning of religiosity and spirituality.

An effort to empirically distinguish the numinous from the mundane first begins with definitions, and such definitions are informed by philosophical and/or theological presuppositions (Peet, 2005; Speck, 2005). Though such starting points are potentially restricting, the problem of the criterion (Amico, 1993) suggests that it is problematic to create standards to delineate the numinous from the mundane without employing specific assumptions about their essential features. One cannot however, make proposals about these essential features without concurrently making assumptions about the utility of specific criteria that indicate their demarcation. Efforts to define the essential features of numinous constructs are consequently problematized, something long recognized by scholars in comparative religious studies who have attempted to ascertain the necessary and sufficient attributes of religion (Martin, 2009). In our efforts to empirically investigate the numinous it seems impossible to escape that “value considerations impinge upon measurement in a variety of ways, but especially when a choice is made in a particular instance to measure some things and not others” (Messick, 1975, p. 960). This impingement of values does not have to be debilitating, and particular responses to this problem may actually be aligned with our evolving interpretation of construct validity.

Just as the value-laden nature of observation prevents an assessment of theory according to the facts (Kuhn, 1962; Messick, 1980, 1981, 1995) the truth of a particular definition of the numinous is beyond empirical verification. Construct validity is not an inherent feature of a particular scale, but is instead an evaluative act whereby validity arguments are made for a specific interpretation of a set of scores (Cronbach, 1989; Kane, 2001, 2009). Consequently when making these evaluative judgments “one does not assess the validity of an indicator, but the use to which it is being put” (Carmines & Zeller, 1979, p. 12). In an analogous way, so too our “definitions of religion are not expected to describe its ‘essence’ as such but are considered as proposals to use the term within specific contexts” (Molendijk, 1999, p. 9). Definitions of the numinous are not without implications, and it is the academic community who must ultimately decide what consequences are more or less favorable across various contexts. This pragmatic response shifts our focus from an examination of whether specific definitions of the numinous capture their necessary and sufficient properties to an evaluation of the consequences that follow from specific definitions. Such consequences are highlighted below in an effort to derive a working definition of numinous constructs.

Defining Numinous Constructs

How should religiosity and spirituality be defined? What are the implications of different definitions, and what, if any, definition potentially minimizes undesirable consequences? Much has been written about this issue (e.g. Hill et al., 2000; Moberg, 2010) and proposed definitions of numinous constructs must contend with the shift in the colloquial usage of these terms. Demarcating the spiritual from the religious is a relatively recent phenomenon (Wulff, 1997) that is largely idiomatic to Western culture (Dow, 2007). Among both laity and academics (Bjarnason, 2007; Hodge & McGrew, 2006; Marler & Hadaway, 2002; Schlehofer, Omoto, & Adelman, 2008; Tisdell, 2003; Zinnbaur et al., 1997) spirituality has come to be associated with an individual’s personal, existential connection to the transcendent whereas religiosity is often relegated to the affiliated practices and dogma of organized institutions. Not only is this distinction contrary to the historical use of these terms (Wulff, 1997), but it

has the potential to polarize spirituality and religiosity by suggesting that spirituality is good, whereas religiosity is bad (Pargament, 1999). Broadly speaking, definitions of the numinous can be categorized by whether they are functional or substantive (Berger, 1974; McKinnon, 2002; Pargament, 1999), and each approach tends to have unique consequences. Substantive definitions attempt to describe the essential features of numinous constructs whereas functional definitions aim to articulate the role or use that numinous constructs fulfill within human behavior. A central criticism of functional definitions is that they often confound numinous constructs with other psychological variables (Koenig, 2008) or that the definition is so broad that literally everyone tends to be either religious or spiritual (Spilka, Hood, Hunsberger, & Gorsuch, 2003). As argued above, considerations of essentialist definitions are beyond empirical scrutiny and can only be approached through the lens of a priori philosophical and/or theological assumptions. This section will briefly review three definitions of numinous constructs that have aimed to reconcile these issues. This is concluded by suggesting that combination of these approaches may limit undesirable consequences.

Zinnbauer and Pargament (2005) provide two distinct approaches to defining the numinous, though under both approaches the sacred acts as a common core of both spirituality and religiosity. The sacred is viewed as any aspect of life that is perceived by the individual to have taken “on a divine character through their association with or representation of the holy” (p. 34). Cultural constructions (e.g. marriage), concepts (e.g. justice), or even inanimate objects (e.g. cross) may be viewed as that which is sanctified. Zinnbauer conceives of spirituality as being broader than religiosity. According to his view, “spirituality is defined as a personal or group search for the sacred” whereas religiosity is “a personal or group search for the sacred that unfolds within a traditional sacred context” (p. 35). Whether a person praying is classified as spiritual or religious would therefore be contingent upon whether their understanding of that prayer is associated with meaning derived from a traditional sacred context. Though this view accommodates a growing percentage of individuals that define themselves as spiritual, but not religious (Fuller, 2001) it does not easily handle individuals that are engaged in seeking the sacred

primarily for the pursuit of secular ends. For example, many individuals may attend religious services for primarily social reasons (Allport & Ross, 1967), and according to Zinnbauer's definition these individuals would not be classified as spiritual or religious. This is contrary to the view of Pargament, who views religiosity as a broader concept than spirituality.

Pargament (1997) does not view religiosity as a search for the sacred, but instead conceives of religiousness as "a search for significance in ways related to the sacred" (p. 32). By significance Pargament (1999) refers to "whatever people value in their lives" (p. 11). In other words, an individual may seek value in their lives through multiple means, and it is when this path includes the sacred that it can be categorized as religious (Zinnbauer & Pargament, 2005). Under this view spirituality is a search for the sacred, thus making it a prominent function of religion, but it is not the only end that a religion may serve (Pargament, Maygar-Russell, Murray-Swank, 2005). Consequently, an individual that attends church for predominantly social reasons would be classified as religious, but not spiritual. Though this conceptualization does indeed have some advantages, it still appears that there may be some situations in which the context of a belief, value, or practice is important for classifying it as religious or spiritual. For example, if an individual states "I am pursuing God for the sake of apprehending God," then according to Pargament this individual is engaged in a spiritual pursuit whereas according to Zinnbauer the degree to which this pursuit and understanding emanates from a traditional sacred context determines whether it is spiritual or religious. If an individual seeks peace (i.e. significance) by going to a psychic that presumably communicates with the dead (i.e. sacred) this would be classified as a religious behavior by Pargament and a spiritual behavior by Zinnbauer. From these implications, a consideration of context may be judged as important when making distinctions among numinous constructs.

Hill and colleagues (2000) have distinguished numinous constructs through use of social contexts (see Table 1). From Table 1 it is seen that spirituality is defined as the *feelings, thoughts, experiences, and behaviors that arise from a search for the sacred*, and though religiosity shares this component of spirituality it is primarily distinguished by the constant of criterion 3. Criterion 3 indicates that the means

Table 1

National Institute of Health Research definition of Spirituality and Religiosity

	Criterion 1		Criterion 2		Criterion 3
Spirituality	=	The feelings, thoughts, experiences, and behaviors that arise from a search for the sacred.	N/A		N/A
Religion	=	The feelings, thoughts, experiences, and behaviors that arise from a search for the sacred.	<u>AND/OR</u>	A search for non-sacred goals (e.g. identity, meaning, etc.) in a context that has as its goal the facilitation of Criterion 1.	<u>AND</u> The means and methods (e.g. rituals and prescribed behaviors) receive validation and support from an identifiable group

Note: Table is adapted from Hill et al., (2000, p. 66); N/A = not applicable; Search = attempts to identify, articulate, maintain, or transform. Sacred = divine being, divine object, Ultimate Reality or Ultimate Truth as perceived by the individual.

and methods for this search *receive validation and support from an identifiable group*. In other words, particular feelings, thoughts, and experiences in the search for the sacred are legitimated by a larger community. This larger group not only provides a particular interpretation for such experiences, but may also prescribe certain practices for accessing the sacred. Though the view by Hill and colleagues accounts for individuals who pursue secular goals through sacred means with the implementation of criterion two, it may still be criticized on three accounts. First, utilizing an identifiable group as the central criterion to demarcate religiosity from spirituality is still ambiguous. What constitutes an identifiable group? Would a family, gang, or even three friends be considered an identifiable group? If so, the definition provided in Table 1 may be overly inclusive. Secondly, the inclusion of Ultimate Reality or Ultimate Truth as part of the conceptualization of the sacred is also overly broad. For centuries philosophers have engaged in a metaphysical quest to understand Ultimate Reality, and a similar quest may be currently undertaken in quantum mechanics. Clearly it seems problematic to classify an individual as engaged in a spiritual pursuit who seeks to understand Ultimate Truth, though many of these

individuals may strictly believe in a material reality while rejecting all forms of Cartesian dualism. Though these endeavors may in some way resemble numinous pursuits, clarity is retained by stating that such pursuits are religious and/or spiritual to the extent that this understanding reflects “a divine character through their association with or representation of the holy” (Zinnbauer & Pargament, 2005, p. 34). Finally, Hill and colleagues claim that “spirituality and religiousness can (and often do) co-occur” (p. 70), yet it remains questionable how researchers should view some behavior. For example, if an individual is praying in an effort to understand God and this act is validated by an identifiable group, should this behavior be labeled as religious or spiritual? If this behavior is spiritual, then what is the advantage of utilizing criterion 3 as a means to demarcate religiosity from spirituality? If this behavior is religious, then even though religiosity may foster spirituality, such behavior would still be labeled as religious. Though this latter possibility may be advantageous, labeling specific behavior still appears to be puzzling under this definition.

From this line of reasoning it may be desirable that a definition of the numinous takes the following points into account: 1) The sacred provides a substantive core of both religiosity and spirituality, 2) The sacred should not be overly broad in scope, 3) The search for significance may be an important functional element of religiosity, 4) A traditional sacred context may adequately distinguish religiosity from spirituality, and 5) The definition should be capable of distinguishing the growing segment of population that identifies themselves as spiritual, but not religious. A working alternative view of spirituality and religiosity that takes these considerations into account is provided in the Table 2. A few advantages of this alternative definition will be highlighted.

First, spirituality is defined as the feelings, thoughts, experiences, and behaviors that arise from a search for the sacred whereas religiosity maintains the functional element of a search for significance in ways that are related to sacred. However, religiosity remains distinguished by not only this functional search for significance, but also by the degree to which the means and methods for approaching and understanding significance emanate from a traditional sacred context. For example, an individual that

Table 2

A Working Alternative View of Spirituality and Religiosity

		Criterion 1		Criterion 2
Spirituality	=	The feelings, thoughts, experiences, and behaviors that arise from <i>a search for the sacred</i> .		N/A
Religion	=	The feelings, thoughts, experiences, and behaviors that arise from <i>a search for what is significant in ways related to the sacred</i> .	<u>AND</u>	The means and methods for approaching and understanding significance (e.g. rituals and prescribed behaviors, tenets, etc.) emanates <i>from a traditional sacred context</i> .

Note: Search = attempts to identify, articulate, maintain, or transform; Sacred = any aspect of life that is perceived by the individual to have taken on a divine character through its association with or representation of the holy; Significance = whatever people value in their lives.

seeks to increase social influence (i.e. significance) through the development of psychic abilities (sacred) is not engaged in a religious pursuit even though such a pursuit may involve the sacred. This distinction arises since religiosity is demarcated by a traditional sacred context. Additionally, it is important to note that spirituality is demarcated by search for the sacred, yet religiosity is defined by a search for significance in ways related to the sacred. This distinction is aligned with Pargament (1999) and therefore still maintains that individuals who attend church for extrinsic reasons are religious, but not spiritual. The only caveat is that this behavior must occur within a traditional sacred context to be defined as religious. Given these considerations the same individual that was engaged in a pursuit of social influence (i.e. significance) through the development of psychic abilities (sacred) would not technically be engaged in either a religious or spiritual pursuit. This individual is engaged in a material pursuit, though they may have utilized spirituality to aid in this endeavor. This individual would be engaged in a spiritual pursuit if they were seeking to apprehend, conserve, or transform their understanding of the sacred through the development of psychic abilities.

Though this definition appears to capture individuals that may define themselves as spiritual, but not religious, it is important to consider the extent to which religiosity and spirituality overlap under this framework. First, spirituality is defined by a search for the sacred whereas religiosity is in part distinguished by search for significance in ways related to the sacred. This distinction implies that the quest for significance, or what is of personal value, is an important function of religiosity. Religiosity is therefore not a quest for the sacred per se, but under this view religions have the dominant function of elevating a particular understanding of the sacred as that which is of *ultimate significance* and thus worthy as an end in itself. In other words, spirituality remains a dominant function of religion to the extent that a religion promotes a particular search of the sacred as something of ultimate significance. Buddhists may promote an escape from *samsara* (i.e. cycle of suffering), Muslims may promote *ibadah* (i.e. worship of the one true God), whereas some Christians may promote an active *pistuo* (i.e. faith) centered in the greatest two commandments as defined in the Gospel of Matthew. For example, an individual who attempts to understand God for the sake of understanding God (or who engages in meditation to escape *samsara*) is engaged in a religious pursuit if their interpretation of this undertaking emanates from a traditional sacred context that elevates this practice as something of ultimate significance. Religious meaning systems therefore provide a framework for understanding and interpreting these experiences. This same individual is engaged in a spiritual pursuit if this quest is not understood as an ultimate significance whose meaning is derived from a traditional sacred context. The definition provided in Table 2 therefore creates a strong, though admittedly controversial, distinction between religiosity and spirituality.

The described distinction between religiosity and spirituality is not meant to convey the essential truth about numinous constructs, nor is it itself without difficulties. Other researchers may disagree with these distinctions and strive to formulate other conceptions of numinous constructs. No approach to defining the numinous is without consequence; and efforts to demarcate the spiritual and religious should be guided by the pragmatic need to reduce consequences that are judged to be undesirable given specific

aims and purposes. Though it is unlikely that consensus will emerge regarding the definition of numinous constructs researchers should strive for clarity in their articulation of the numinous. The approach outlined above is an effort to approximate such clarity.

Categorical Classification Numinous Constructs

Gorsuch (1984, 1988) indicated that for numerous decades the psychology of religion was primarily concerned with issues of measurement, and though necessary to the growth of the field, advancements in the measurement of numinous constructs was often empirically driven. Emmons & Paloutzian (2003) suggest that the psychology of religion, though not completely ceasing in a concern about the measurement of numinous constructs, will best advance through an interdisciplinary investigation of religious and spiritual constructs. The numinous may be conceived at multiple levels of reality (e.g. biological, social, etc), with each level exhibiting unique characteristics that are not necessarily reducible to other levels (Paloutzian & Parks, 2005). For example, religious or spiritual experiences could be approached as a physiological or a social psychological phenomenon. Identifying physiological responses that are associated with a religious or spiritual experience does not necessarily explain social psychological processes that may also be involved. Social psychological processes are therefore not negated by the identification of physiological mechanisms. According to Emmons & Paloutzian (2003) this multilevel interdisciplinary paradigm thus “recognizes the value of data at multiple levels of analysis while making nonreductive assumptions concerning the value of spiritual and religious phenomenon” (p. 395). Recognizing that the numinous can be conceived and investigated at multiple levels of reality informs what has been labeled a hierarchical approach to religious and spiritual constructs frequently examined within the psychology of religion.

Tsang and McCullough (2003) were the first to articulate this hierarchical approach toward the conceptualization of numinous constructs, and this framework was later elaborated upon by Hill (2005). Tsang and McCullough (2003) argue that the selection of measures may in part be based upon Gorsuch’s

(1984) insight there may exist a general religiousness factor, and this general factor may be divided into smaller subdivisions that are useful for more specific predictions. Tsang & McCullough (2003) contend that psychologically numinous measures reflect this hierarchical relation wherein “at the superordinate level are dispositional measures of general religiousness, which assess religiousness as broad individual differences among persons in the tendency toward religious interests and sentiments” (p. 357). This is referred to as a dispositional or Level I aspect of the numinous whose measurement aims to assess “broad individual differences in people’s religiousness or spirituality” (p. 350) that may be analogous to that of the Big Five personality traits (Hill, 2005). The second aspect of numinous constructs is referred to as an operational level, or Level II, and reflects a “subordinate level of organization... which assess how particular aspects of religion function” (Tsang & McCullough, 2003, p. 357). In other words, individuals may therefore be equivalent in their propensity toward the numinous, yet profoundly depart in their “ways of experiencing, expressing, and deploying their religiousness to solve life’s problems” (p. 352).

Given this conceptualization, numinous measures may be divided according to the psychological hierarchal organization presented by Tsang & McCullough. According to Hill (2005) Level I and Level II measures may be classified as either substantive or functional respectively. Given that the language employed by Tsang and McCullough (2003) coincide with what is utilized in hierarchical linear modeling (Raudenbush & Bryk, 2002) this paper discusses these distinctions according to a categorical classification demarcating the substantive and functional aspects of the numinous described by Hill (2005). Substantive measures, or measures aimed at assessing the numinous as a broad individual difference variable, may include scales of religious commitment (Worthington et al., 2003), spiritual transcendence (Piedmont, 1999), or faith development (Leak, Loucks, & Bowlin, 1999). Functional or operational aspects of numinous may include measures of daily spiritual experiences (Underwood & Teresi, 2002), religious motivation (Allport & Ross, 1967), and many measures that are relevant to health related research, such as religious strain or coping (Hill & Pargament, 2003). This categorization of numinous constructs allows one to control for interesting possibilities. For example, individuals may be

equal in their religious commitment (i.e. substantive), yet diverge in their motivation for being religious or their daily spiritual experiences (i.e. functional). Investigations of whether daily spiritual experiences contribute to positive psychological outcomes would therefore need to control for the possibility that part of this correlation may be attributed to the general religious factor, or substantive propensities. This distinction between substantive and functional aspects of numinous constructs hence appears to be a useful starting point for categorizing numinous constructs.

Though the categorization of numinous constructs discussed by these authors appears to be useful it is conceivable that this same logic could be radically extended. The structure of such an extension however would vary depending upon the context of each study, and the theoretical rationale guiding such an extension. The general religious factor, or substantive disposition, would likely need to be consistently measured across studies. However, there are possible contexts in which it may be advisable to view functional aspects of the numinous as substantive individual difference variables. For example, individuals with equal scores in the extent to which they take a questioning approach to religion (Batson, Ventis, & Schroengrade, 1993) may further diverge in their experience of religious social support. Variation in social support may therefore moderate the effect of this approach on health related outcomes, or depending on the theoretical rationale it may mediate this effect. In an analogous way, individuals of equal religious motivation may depart in either the average frequency and/or intensity of daily spiritual experiences. Individuals may therefore be equally committed to a religious worldview (i.e. substantive), of similar motivation (functional equivalence), yet diverge in daily spiritual experiences (i.e. functional divergence). Given these considerations it would appear as though functional operations, as defined by this view, may be further divided into subsequent classifications given a strong theoretical rationale. This extension not only has the advantage of potentially allowing for greater theoretical precision, but subsequently allows for increased statistical control in the prediction of relevant variables.

It is questionable whether faith development should be conceived as a broad-band dispositional or substantive variable (Hill, 2005). Hill in fact labels faith development as a substantive feature of

religiosity, though the present study conceptualizes faith as a functional characteristic. Fowler (1981) views faith as a universal feature of humanity. Through a series of semi-structured interviews Fowler hypothesized that this feature develops through the coordination of seven structures, that include form of logic, perspective taking, moral judgment, social awareness, locus of authority, world coherence, and symbolic function. Development under this view does not imply that an individual has necessarily more or less faith, but instead reflects “an underlying system of transformations by which the self is constituted as it responds to questions of ultimate meaning,” thus implicating that “change eventuates in increasingly complex structures” (Fowler, Streib, & Keller, 2004, p. 11). Measures of faith development, at least under this theoretical framework, would not necessarily indicate “broad individual differences among persons in the tendency toward religious interests and sentiments” (Tsang & McCullough, 2003, p. 357), but may instead reflect differences in the cognitive appropriation of religious reality. In other words, two individuals may attend religious services twice a week, yet diverge in their construction of religious reality. There may be additional operational/functional aspects of faith development (e.g. individuals of the same stage of faith may depart in their daily spiritual experiences), but this line of reasoning suggests that the theoretical context of each study should be used to guide the specificity with which categorization of numinous constructs are determined. Within the context of this study, faith development is viewed as a functional, or operational numinous variable.

Conceptualizing Positive Psychological Functioning

Just as philosophical assumptions underscore efforts to empirically demarcate numinous constructs so too do analogous positions inform views toward positive human functioning. Difficulties arise in moving from an “is” to an “ought” statement (Hume, 1888), and consequently it remains problematic to derive prescriptions about how one ought to live from empirical evidence alone. Each construal of positive human functioning, either tacitly or explicitly, makes assumptions about the desirable starting point for investigating positive functioning. Numerous philosophical positions are prominent within the literature (Ryff, 2008; Tiberius, 2006), and though many scholars appear to agree

that “health is not merely the absence of disease, but a state of complete physical, mental, and social well-being” (Turnock, 2009, p. 52), consensus has yet to emerge about the components of positive psychological functioning. Though many controversies remain unresolved, generally speaking psychologists tend to examine positive psychological functioning from two perspectives. The first perspective is that of subjective well-being (Kahneman, Diener, & Schwarz, 1999; Larson & Eid, 2008), which is predominantly empirically driven, as opposed to being guided by a priori philosophical prescriptions. In other words, this view begins with the subjective state of each individual when assessing positive psychological functioning; whereas the second approach is more prescriptive in kind than that of subjective well-being. The second approach may be characterized as a eudaimonic perspective of positive human functioning (Ryan & Deci, 2001; Ryff, 2008), and this view contends that positive functioning results from living in accordance with human potentiality. These two approaches are thus in part contrasted by their valuation of in the individual’s own perspective when assessing positive psychological functioning. Subjective well-being emphasizes an individual’s personal standards for making judgments about positive psychological functioning, whereas the eudaimonic approach contends that an individual may be subjectively happy, yet still fail to actualize their human potentiality. Conversely, it is equally possible that an individual could actualize their human potential, yet remain unhappy. Both of these perspectives are reviewed in turn.

Subjective Well-Being

Subjective well-being is typically defined by three components, which include positive affective states, negative affective states, and life satisfaction (Larson & Eid, 2008). The overall balance of positive over negative affective states, or the hedonic component of subjective well-being, is often referred to as happiness (Bradburn, 1969). Life satisfaction, or the cognitive component of subjective well-being, reflects integrative judgments about the overall conditions of life (Diener, 1984). Given that subjective well-being is multidimensional it is conceivable that each component may not only have distinct predictors, but also for each element to combine in distinct ways to produce different outcomes

(Diener, 2008). An individual may therefore undergo extreme emotional duress, yet still find reasons to be satisfied with their life as a whole (Haybron, 2008). Despite this however, some empirical evidence suggests that each component of subjective well-being loads onto a single factor (Linley, Maltby, Wood, Osborne, & Hurling, 2009), which implies that observed inter-correlations may be explained by a single second-order construct. Though a single underlying construct may indeed account for observed correlations across measures of affect and life satisfaction, disparate theoretical accounts may be needed to explain both the affective and cognitive components of subjective well-being, as well as their inter-relationship. Nonetheless, general conclusions about subjective well-being as well as the observed association between subjective well-being and numinous constructs may still be derived.

Theoretical explanations of subjective well-being can generally be placed within two camps, which Diener (2009) refers to as the bottom-up and top-down perspectives. Bottom-up approaches stem from the Lockean view that judgments of well-being are based “upon a mental calculation to sum momentary pleasures and pains” (p. 42). Under this view an individual responding to statements about their global life satisfaction may evaluate distinct aspects of their life, weight them according to the extent to which each aspect is valued, and respond accordingly to statements about their global satisfaction. Early bottom-up approaches aimed to identify external circumstances and other demographic characteristics that predicted subjective well-being, yet were typically only able to predict about 8% to 20% of the variance in SWB scores (Diener, Suh, Lucas, & Smith, 1999). This in part incited a consideration of top-down approaches aligned with the Kantian position “that there is a global propensity to experience things in a positive way, and this propensity influences the momentary interactions an individual has with the world. In other words, a person enjoys pleasures because he or she is happy, not vice versa...” (Diener, 2009, p. 42). Heritable dispositions, such as personality, are predictive of subjective well-being (Larson & Eid, 2008), and this is generally aligned with the Kantian perspective. Recent evidence however, suggests that a propensity toward experiencing a particular level of subjective well-being may be affected by life circumstances (Diener & Seligman, 2004), such as divorce,

unemployment, death of spouse, or acquiring a disability (Diener, Lucas, & Scollon, 2006). Both bottom-up and top-down approaches may therefore be at work in influencing observed subjective well-being scores (Diener, 2009). In other words, not only may there be psychological or inheritable propensities that influence an individual's reaction to experiential events, but these events may have lasting effects on dispositional propensities toward experiencing subjective well-being.

Numinous constructs may be conceived as reflective of either a bottom-up or top-down processes. Much research in this area however, may be classified as utilizing a bottom-up approach in that they investigate whether subjective well-being is predicted from numinous constructs when measured as a demographic, or a substantive inter-individual difference variable. Though such evidence is at times inconsistent (Levin, 1997; Levin & Chatters, 1998; Robbins, Francis, & Edwards, 2008; Snoep, 2008), numerous studies have observed small to moderate correlations across multiple samples among substantive numinous measures and subjective well-being (Argyle, 1999; Diener, 2009; Hadaway, 1978; Myers, 2000). Involvement in religion is a relatively consistent predictor of life satisfaction and happiness across a range of studies (Kahnemann & Krueger, 2006) and doubting religious beliefs due to perceived evil within the world and/or personal suffering is predictive of a range of negative psychological outcomes (Galek, Krause, Ellison, Kudler, & Flannelly, 2007). Myers (2008) reports that according to the 1984 General Social Survey individuals who viewed faith as an important influence over their lives were twice as likely as those who did not see faith as an important influence over their lives to indicate that they were 'very happy' (p. 24). Myers also indicates that a 2006 national survey of church attendees reported that 43% of weekly attendees were very happy compared only 26% of individuals that attended church less than one time per week. More recent evidence is provided by Stark and Maier (2008), who examined 24 years of General Social Surveys, and found a relationship between church attendance and happiness of .187 and an association of .212 of perceived closeness to God and happiness. Moreover, their analysis indicated that these relationships remained statistically significant when controlling for numerous background variables. Cross-national data has found similar relationships in

Japan (Roemer, 2010), Singapore, (Swinyard, Kau, Phua, 2001), Kuwait (Abdel-Khalek, 2006, 2010) and among Jewish samples (Rosmarin, Pargament, & Mahoney, 2009).

Recently, much attention has been given to mediation models that may account for these observed relationships (Argyle, 1999; Blaine & Crocker, 1995; Ellison, 1991; Myers, 2008). It is arguable that some mediation studies may conceptualize numinous constructs through the lens of a top-down approach. One possibility for viewing the numinous through a top-down approach is to conceptualize religiosity as a meaning system (Silberman, 2005). Under this view religiosity is not only a source of meaning, but religions inform global beliefs and goals that are important for constructing meaning from subsequent experience (McIntosh, 1995; Parks, 2005). Religion may therefore be a source of ultimate value (Emmons, 1999; Pargament, 1999), while acting as an interpretative lens that enhances a sense of meaning and control (Parks, 2005). Some evidence suggests that perceived control and sense of meaning mediates the relationship between numinous measures and subjective well-being. For example, Jackson & Bergeman (2011) found that perceived control partially mediated the effect of daily spiritual experiences, religious coping, and religious practices on subjective well-being in an adult sample, though this effect was not consistent across distinct age categories. Byron & Miller-Perrin (2009) found that purpose in life fully mediated the correlation between strength of faith and perceived wellness in life. Similarly, Steger & Frazier (2005) found that the correlation between life satisfaction and religious commitment failed to be statistically significant when controlling for reported meaning in life.

This evidence not only implies that religious worldviews may facilitate the sense that life is meaningful, but it also supports the proposal that deriving a sense of meaning in life is an important pathway from substantive numinous constructs to general satisfaction with life. It is feasible that the effect of numinous constructs on life satisfaction is mediated by meaning in life; however, such findings remain open to other interpretations (Miller & Thoresen, 2003). For example, basic psychological need fulfillment (Deci & Ryan, 2001) may lead to both religious commitment and meaning in life, thus making observed associations spurious. Secondly, meaning in life may itself be viewed as an outcome, thus the

path from religious commitment toward greater meaning may also be multi-faceted in that it varies across personal and/or contextual variables. In other words, further elaboration is needed in order to specify conditions under which meaning in life may be obtained via indicators of substantive religiosity. The implications of these alternative interpretations become more apparent when considering other views of positive human functioning.

Self-determination Theory and Eudaimonic Well-Being

Some critics of subjective well-being contend that an individual may report being happy, yet still fail to actualize their potential as a person (Ryff, 1989). The cognitive and affective components of subjective well-being give prominence to an individual's own criteria and experienced states. An individual may be completely satisfied with their life, yet still fail to flourish as a human being. Haydon (2008) argues that strong distinctions can be made about whether an individual subjectively feels happy, and the degree to which their life is judged as being in accordance with how one *ought* to live. The eudaimonic perspective, which is heavily influenced by the work of Aristotle, is generally informed by the "teleological idea that well-being consists in *nature fulfillment* (p. 25). This may also be seen from an etymological perspective, wherein eudaimonia stems from the Latin word *eu*, which can be interpreted as good, and *daimon* refers to one's true nature (Ryff & Singer, 2008; Waterman, 1993). From the eudaimonic view one therefore ought to live in accordance with this nature, though from a philosophical standpoint numerous positions can be taken about the constituents of human nature. For example, it is possible that our nature consists of desire. Hence, to live in accordance with one's nature would be the fulfillment of desire (Haydon, 2008). Despite such possibilities, there are two prominent eudaimonic perspectives within the literature. The first is that of Ryff (1989,1995) who conceives of psychological well-being as six conceptually distinct dimensions: 1) self-acceptance, 2) purpose in life, 3) autonomy, 4) environmental mastery, 5) personal growth, and 6) positive relationships. The position of this study however, is aligned with the arguments made by Deci & Ryan, (2001) who state that these dimensions are better conceived as outcomes of living in accordance with human nature, and do not necessarily

necessitate the process through which this nature is fulfilled. For this reason this section will emphasize the eudaimonic perspective of well-being as articulated by proponents of self-determination theory (Deci & Ryan, 2001).

Self-determination theory takes an organismic approach in its conceptualization of humanity, thus a person is viewed as a self-organizing system that proactively strives to integrate cultural meaning and other environmental stimuli (Ryan, 1995). This self-organizing quality denotes a regulatory process wherein human beings exemplify a capacity to coordinate both external and internal contingencies (Deci & Vansteenkiste, 2004). An adolescent for example may engage in religious activity to maintain contingent parental love. Conversely religious activities may be partaken because they have been reflected upon, and are endorsed as being aligned with their sense of self. According to self-determination theory the self consists of a set of integrated processes, with each specific regulation differing in the degree to which it is experienced as an authentic element of one's true self (Ryan, 1995). Each regulation is therefore hypothesized to vary in its felt *autonomy*, or the degree to which it is experienced as being self-endorsed (Ryan & Connell, 1989). To put this differently, an autonomous act is one in which the behavior, value, or motive has become fully integrated within the self. Given that the self consists of integrated processes, the concepts of internalization and integration have become crucial within self-determination theory. "Internalization refers to people's 'taking in' a value or regulation, and integration refers to the further transformation of that regulation into their own so that, subsequently, it will emanate from their sense of self" (Ryan & Deci, 2000a, p. 71). Self-determination theorists have therefore sought to elaborate the basic "conditions under which something becomes meaningful and coherent with respect to the self" (Ryan & Deci, 2000b, p. 325); or in other words self-determination theory reflects an effort to stipulate the circumstances under which internalization and integration occur.

According to this view the integration of regulatory processes occur under specific environmental conditions. Environments that are conducive to the fulfillment of basic psychological needs promote both the internalization and integration of cultural values, norms, and other behavioral practices (Deci, &

Vansteenkiste, 2004; Ryan, 1995; Ryan & Deci, 2000a, 2000b). A psychological need is an energized state that when fulfilled leads to well-being; when such needs are frustrated however, the consequence may be a range of negative psychological outcomes (Ryan & Deci, 2000b, 2001). From this perspective if an environment is conducive to the fulfillment of basic psychological needs it not only fosters the integration of meaning, but also has positive implications on psychological functioning. Self-determination theorists have proposed the existence of at least three basic psychological needs, which include the need for *autonomy*, *relatedness*, and *competence*. The need for autonomy “refers to volition, to having the experience of choice, to endorsing one’s action at the highest level of reflection” (Deci & Ryan, 2008, p. 7). The need for relatedness reflects a universal inclination to feel a sense of connection through interaction with other people, whereas the need for competence is concerned with a propensity toward feeling efficacious over internal and external forces (Ryan, Huta, & Deci, 2008). The satisfaction of one’s need for autonomy, relatedness, and competence is “considered the means through which optimal development and authentic functioning...versus passivity and alienation can be understood (Deci, & Vansteenkiste, 2004, p. 24-25).

Self-determination theory provides useful predictions across distinct areas of human functioning. This theoretical framework has implications within educational (Ntoumanis, 2005; Ryan & Connell, 1989), occupational (Gagné & Deci, 2005; Vansteenkiste, Neyrinck, Niemiec, Soenens, Witte, & Van den Broeck, 2007), and other relational contexts (Grolnick, Deci, & Ryan, 1997; La Guardia, Ryan, Couchman, & Deci, 2000). Within the domain of religiosity/spirituality the vast majority of research has focused upon the extent to which an environment supportive of basic psychological needs are conducive to the integration of religious/spiritual meaning (Ryan, Rigby, & King, 1993). For example, parental beliefs about whether religious meaning is symbolic or literal have been correlated with practices that either foster or inhibit the support of basic psychological needs (Duriez, Soenens, Neyrinck, & Vansteenkiste, 2009). Familial environments that are autonomy supportive (e.g. foster critical reflection and model intrinsic value of practices) are related to greater integration; whereas more controlling

environments tend to foster less authentic conformity (Assor, Cohen-Malayev, Kaplan, & Friedman, 2005). Other research has found that the degree to which religious activities were self-determined (i.e. autonomous) has been related to life satisfaction, meaning in life, and other measures of positive psychological functioning (Neyrinck, Vansteenkiste, Duriez, & Hutsebaut, 2006; O’Conner & Vallerand, 1990). This line of research implicates the potential importance of basic psychological needs for understanding the association between substantive religiosity/spirituality indicators and positive psychological outcomes.

This research however, has tended to neglect an important claim of self-determination theory. According to self-determination theorists positive human functioning is the result of eudaimonistic living (Ryan & Deci, 2001). To live in accordance with one’s daimon, or true self (Waterman, 1993) is construed as living in way that is conducive to the fulfillment of the basic psychological need for autonomy, relatedness, and competence (Deci & Ryan, 2008a). The effect of eudaimonic living upon positive psychological outcomes is proposed to be “mediated by the satisfaction of basic psychological needs” (Ryan, Huta, & Deci, 2008, p. 143). Environments supportive of basic psychological needs may be conducive to the integration of religious/spiritual meaning, yet it is the fulfillment of basic psychological needs themselves that constitute the pathway to positive psychological outcomes. Satisfying basic psychological needs, as opposed to the extent to which regulations are integrated, have a direct effect on positive psychological outcomes. Correlations between religious/spiritual integration and positive psychological outcomes should therefore be examined in light of these needs. From self-determination theory one may predict that the effect of substantive numinous constructs upon positive psychological outcomes is mediated by the fulfillment of the need for autonomy, relatedness, and competence.

Moderated Mediation Hypothesis

Deductions from proposals made by proponents of self-determination theory (Ryan, 1995; Deci & Ryan, 2001) suggest that the effect of substantive numinous constructs on positive psychological functioning are mediated by the satisfaction of three basic psychological needs. This includes the need for autonomy, relatedness, and competence. Variation in functional numinous constructs however, is anticipated to be an important consideration in dissecting differences in the extent to which substantive numinous constructs predict basic psychological need fulfillment. In other words, two individuals of equivalent religious/spiritual commitment (i.e. substantive aspect) may vary in their appropriation of religious meaning, thus leading to differences in the extent to which basic psychological need fulfillment is reported. Given that basic psychological needs are conceived as universal (Deci & Vansteenkiste, 2004) it is anticipated that the effect of perceived need fulfillment on positive psychological outcomes is constant across functional numinous constructs. A conceptual overview of this hypothesis may be found in Table 3. This section will first review research that is relevant to the mediation hypothesis. Given that much of the research depicting the zero-order correlation between substantive numinous constructs and positive psychological outcomes has already been presented, this section will focus on the path from substantive numinous constructs to basic psychological needs. This will be followed by an examination of faith development, as conceived by (Fowler, 1981), as a potential moderator of the effect of substantive numinous constructs on basic psychological need fulfillment.

The Path from the Numinous to Basic Psychological Needs

As previously indicated deductions from self-determination theory imply that the effect of substantive numinous constructs on positive psychological outcomes is mediated by the perceived fulfillment of three basic psychological needs, which include the need for autonomy, relatedness, and competence. Autonomy “refers to a sense of choice and volition in the regulation of behavior” (Ryan, Huta, & Deci, 2008, p. 153) whereas the need for relatedness reflects a person’s “feeling of being connected to and cared for by others” (p. 153). The need for competence is defined as “a sense of efficacy one has with respect to internal and external environments” (p. 153). Though not essential to a

Table 3

Conceptual Overview of Moderated Mediation Hypotheses

	Substantive Dispositions	Functional Moderator	SDT Mediators	Positive Psych. Outcomes
Conceptual Framework	Broad dispositional differences in religiosity/spirituality	Variation in the experience of religious reality	Basic Psychological Needs.	Subjective well-being; Outcomes associated with eudaimonic living.
Operationalization in Current Study	Religious Commitment Inventory-10 (Wothington et al., 2003)	Faith Development Scale (Leak, Loucks, & Bowlin, 1999)	Religious/Spiritual Self-Mastery (Hathcoat & Fuqua, 2012)	Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985); Meaning in Life Scale (Steger, Frazier, Oishi, & Kaler, 2006;

Note: Substantive disposition= numinous constructs that measure extent to which an individual is religious/spiritual; functional moderator = variation in the experience and appropriation of religious reality; SDT = self-determination theory.

proposed mediation hypothesis (MacKinnon & Fairchild, 2009) the presence of a zero-order correlation between substantive numinous measures and basic psychological needs is reviewed within this section. To structure this review it must first be noted that there currently exists a measure to assess basic satisfaction of psychological needs in general (Gagné, 2003) however, only one study was identified that had correlated this measure with a substantive numinous construct (Trent & King, 2010). Though this correlation was not the focus of the study, religious commitment was not significantly related to any of the three basic psychological needs in a small sample of general psychology students. This finding should be interpreted with caution however, given that numerous psychometric problems exist with this scale (Johnston & Finney, 2010). Domain specific versions of the scale exist within the context of relationships (La Guardia, Ryan, Couchman, & Deci, 2000), work (Deci, Ryan, Gagné, Leone, Usunov, &

Kornazheva, 2001), and physical education courses (Ntoumanis, 2005). However, no known measure of perceived need satisfaction has been created that is specific to the religious and spiritual domain (Ed Deci, personal communication, July 31, 2011). A new basic psychological need satisfaction—religious/spiritual scale was therefore developed and pilot tested before implementing the current study (Hathcoat & Fuqua, 2012). A brief description of the findings of the pilot study is presented in the subsequent chapter. Nevertheless, evidence for the association between basic psychological need fulfillment and measures of substantive religiosity/spirituality may still be inferred.

Given that the need for competence reflects the perception of internal and external efficacy, one's sense of self-efficacy and personal control may therefore serve as proxy indicators of the fulfillment of this need. Many researchers have viewed efficacy beliefs and perceived control as psychological resources that potentially contribute to our understanding of the relationship between numinous constructs and health related outcomes (Ellison & Levin, 1998; Moreira-Almeida, Neto, & Koenig, 2006; Oman & Thoresen, 2002). Religious meaning systems may provide a framework for understanding experiential events (McIntosh, 1995) that are in turn related to notions of mastery (Frazier, Mintz, & Mobley, 2005; Greenfield, Vaillant, & Marks, 2009) and self-efficacy (Ellison, 1993; Holland, 2002; Imam, Nurullah, Makok-Abdul, Rahman, & Noon, 2009; Rothlisberger, 2010). This is in part aligned with proponents of attribution theory, who posit that a search for religious causal explanations function to enhance a feeling of self-mastery over the external world (Spilka, Shaver, & Kirkpatrick, 1985). This potential function of religion, to allow for a greater sense of meaning and purpose in life, may be particularly salient in times of emotional distress (Pargament, 1997). For example, individuals that have turned to God may derive a sense of personal control over external circumstances (Fiori, Hays, & Meador, 2004) and frequency of prayer has been negatively correlated to well-being among individuals measured the day before cardiac surgery (Ai, Peterson, Rodgers, & Tice, 2005). It would thus seem that religious worldviews have the capacity to enhance an individual's need for competence.

Religious and spiritual meaning systems may be viewed as a subset of possible cultural worldviews that facilitate a sense that the world is not only meaningful, but controllable. It is important to recognize however that these correlations are not always consistent (Ellison, 1993). Many studies imply that a sense of self-efficacy and belief in divine control may function differently across distinct populations. For example, beliefs in divine control were negatively related to distress in African Americans over the age of 65, yet have been positively related to distress among white Americans over the age of 65 (Schieman, Pudrovska, Pearlin, Ellison, 2006). Similar patterns have been reported for a sense of mastery (Schieman, Pudrovska, & Milkie, 2005). Despite such evidence, experimental manipulations suggest that “experiences that lower feelings of personal control or lower faith in other sources of external control increase belief in an externally controlling God” (Kay, Gaucher, McGregor, & Nash, 2010, p. 44). Randomly assigning individuals to the task of recalling events for which they were not responsible had no statistically significant effect on beliefs about the existence of God, but was related with the extent to which individuals tended to view the world as unfolding according to God’s plan (Kay, Gaucher, Napier, Callan, & Laurin, 2008). It would seem that an absence of personal efficacy may enhance reliance upon external systems of control; however, the relationship remains complex. The extent to which a “divine proxy agency enhances or detracts from a sense of personal efficacy” may change depending upon beliefs about the specific qualities of a divine relationship (Bandura, 2003, p. 172). Pargament and colleagues (1988) has found for example that individuals who view God as a collaborative partner in coping tend to have positive implications toward a sense of competence. Similar implications were not found among individuals that were more passive in their deliberations with God. Though perceived efficacy is typically associated with a range of positive psychological outcomes (Caprara, Steca, Gerbino, Paciello, & Vecchio, 2006) greater attention must be given to the contextual, cultural, and operational moderators of the association between substantive numinous constructs and the need for competence.

The need for relatedness is another basic psychological need hypothesized by proponents of self-determination theory (Ryan, 1995). This need generally reflects a sense of connection resultant from social interaction. Within the religious and spiritual domain however, it is conceivable that this need may be fulfilled through two, potentially distinct pathways. First is that of religious social support. As previously indicated social support has been hypothesized by numerous researchers as providing one possible pathway to health related outcomes (Argyle, 1999; Ellison & Levin, 1998; Myers, 2000, 2008; Seybold & Hill, 2001). This hypothesis in part derives from the frequently reported association between church attendance and such outcomes (McCullough et al., 2000; Plante & Sharma, 2001; Powell, Shahabi, & Thoresen, 2003). For example, on college campuses involvement in religious organizations may not only lessen negative adaptations to college (Bryant, 2007a), but it has also been related to numerous measures of health status (Frankel & Hewitt, 1994). Ellison & Goerge (1994) found in a sample of 3,000 community members that individuals who frequented church reported stronger social networks than those who did not frequent church. Such evidence implies that individuals engaged in religious practice may have enhanced access to social resources. This access may facilitate or enhance the fulfillment of the psychological need for relatedness. Religious practices may function to create a binding moral community (Graham & Haidt, 2010), thus creating the potential for qualitative distinctions between the social support deriving from religious contexts and that typically occurring within secular contexts (Emmons, 1999b). One distinction that is particularly salient, at least among many theistic religions, is the sense of standing in relation to a divine being. Such views do not only seem to be associated with health related outcomes, but are also related to outcomes associated with eudaimonic living (Ryan & Deci, 2001), such as having a sense of purpose and meaning in life (Baldacchino & Draper, 2001).

The act of standing in relation to a divine being is not only central to theistic religious meaning systems, but is also given a prominent place among some psychological theorists. For example, proponents of attachment theory have proposed that the concept of God may serve the same functions as

an attachment figure (i.e. safe haven't, secure base, etc.) (Kirkpatrick, 1992). Just as environmental circumstances that are conducive to fostering secure attachments within interpersonal relations are conducive to well-being (Bowlby, 1988; La Guardia, Ryan, Couchman, & Deci, 2000) so too are patterns in attachment relationships to God are predictive of positive psychological outcomes (Rowatt & Kirkpatrick, 2002). Not only do some individuals view their relationship with God as a source of well-being (Mackenzie, Rajagopal, Meibohm, Levizzo-Mourey, 2000), but perceiving oneself as being closely connected to the divine may promote worldviews that are conducive to better health (Krause, 2002). In a review of 187 articles published in medical journals Baldacchino & Draper (2001) found that these views not only seem to help individuals cope with ailments, but were also predictive of outcomes associated with eudaimonic living (Ryan & Deci, 2000), such as the belief that life is purposeful. Stark & Maier (2008) also found across 24 years of General Social Survey data that "those who reported being extremely close to God are nearly twice as likely to be very happy as those who do not feel near to God" (p. 123). Finally, other evidence has found that prayer, which may be viewed as a vehicle through which a sense of connection with the divine is sustained, was correlated with increases in the sense of peace and purpose in life (Rapp, Rajeski, & Miller, 2000).

Such evidence implies that both social support emanating from a traditional religious context, and one's perceived connection to the divine may serve as nutriment for fulfilling a psychological need for relatedness. Both of these variables however, may reflect distinct paths toward the fulfillment of this need within the religious and spiritual domain. Some evidence indicates that social support may mediate the effect of substantive numinous constructs on psychological adjustment (Salsman, Brown, Brechting, & Carlson, 2005) whereas other research has indicated that substantive numinous constructs were a statistically significant predictor of positive psychological outcomes even when controlling for social support (Ellison, Boardman, Williams, & Jackson, 2001; Ellison, Gay, & Glass, 1989; Levin, Markides, and Ray, 1996). Though integrating such findings remains difficult due to the implementation of distinct scales across studies, such findings imply that social support may be one of many paths from substantive

numinous constructs to positive psychological outcomes. An individual's perceived relationship with God is typically a leading predictor of a range of psychological outcomes when controlling other variables, which include social support (Levin, 2002; Peacock & Poloma, 1999; Pollner, 1989). In other words, though these variables may reflect conceptually distinct pathways to positive psychological outcomes (Heliwell & Putnam, 2004) the multidimensional nature of numinous constructs (Hill & Hood, 1999; Hill et al., 1999) problematizes assumptions pertaining to the homogeneity with which such paths are fulfilled. Though these remain conceptually distinct pathways toward fulfilling the psychological need for relatedness it cannot be assumed that these pathways are equally utilized across various dimensions of numinous constructs.

Indirect inferences may also be made about the association between the psychological need for autonomy and substantive numinous constructs. The need for autonomy reflects the third psychological need identified by proponents of self-determination theory (Ryan, 1995). As previously indicated this need does not reflect a sense of acting independently, but instead "refers to volition, to having the experience of choice, to endorsing one's action at the highest level of reflection" (Deci & Ryan, 2008, p. 7). This particular conceptualization of autonomy is fundamental to the account of human motivation set forth by proponents of self-determination theory (Ryan, 1995). As previously discussed, under this view the self is a set of regulatory processes (Ryan, 1995) that reflects the human capacity to coordinate both internal and external contingencies (Deci & Vansteenkiste, 2004). Under this theoretical framework each regulatory process varies in its degree of autonomy or the extent to which it is experienced as being fully integrated with the sense of self. At one end of the continuum a regulatory process may be intrinsically motivated, or simply done for its own sake. Intrinsically motivated behavior is the epitome of an autonomous act, and hence illustrates a fully integrated regulatory process (Deci & Ryan, 2000). At the other end of the continuum is an externally regulated behavior or a behavior that is compelled due to external contingencies. Not all behavior however, is either externally controlled or intrinsically motivated and will thus vary in its extent to which it is internalized. For example, some behavior may be

internalized, yet motivated by internal conflict (e.g. going to church to avoid feelings of guilt) whereas other behavior may be internalized yet done because it aligned with personal values. What remains of paramount importance for this discussion however, is the proposal that integrated behavior is fostered through the fulfillment of basic psychological needs (Deci & Ryan, 2000).

Since the internalization and integration of regulations are thought to be fostered through the fulfillment of basic psychological needs, indirect evidence for the association between numinous constructs and need fulfillment may be found in research that has examined this account of motivation within the religious or spiritual domain. Environments that tend to be supportive of basic psychological needs also tend to be associated with the integration of religious/spiritual meaning (Ryan, Rigby, & King, 1993). Environments that foster critical reflection and model the intrinsic value of religious practices tend to foster greater integration of religious or spiritual meaning whereas more controlling environments tend to enhance less autonomous conformity (Assor, Cohen-Malayev, Kaplan, & Friedman, 2005). As previously mentioned, other research has indicated that that when religious activities were experienced as self-determined it was related to numerous measures of positive psychological outcomes (Neyrinck, Vansteenkiste, Duriez, & Hutsebaut, 2006; O'Conner & Vallerand, 1990). Though this evidence suggests that fulfillment of these needs are associated with a greater integration of religious meaning, which tends to have positive implications upon positive psychological outcomes, not all beliefs or practices tend to be conducive toward autonomy (Duriez, Soenens, Neyrinck, & Vansteenkiste, 2009). As with the other psychological needs, a direct link from numinous constructs to need fulfillment is not guaranteed. In other words, the extent to which additional constructs facilitate or hinder need fulfillment remains in need of further investigation.

In summary, the above mentioned evidence, though predominantly indirect, suggests that substantive numinous constructs may be related to basic psychological need fulfillment. Numerous theoretical frameworks (Bandura, 2003; Kirkpatrick, 1992; McIntosh, 1995; Pargament, 1997; Spilka, Shaver, & Kirkpatrick, 1985) tend to address relatively distinct aspects of this inference. Self-efficacy

may be viewed as a proxy indicator for the extent to which the need for competence is fulfilled; whereas the integration of religious and spiritual meaning indirectly reflects a sense of autonomy fostered by basic psychological need fulfillment. Social support that emanates from a religious context and a reported connection to a divine being can be conceived as conceptually distinct pathways through which the need for relatedness in the religious/spiritual domain is fulfilled. This does not displace other theoretical frameworks, as they are valuable in their own right. The proposals made by proponents of self-determination theory (e.g. Deci & Ryan, 2000) however, give a useful lens through which seemingly disparate findings within the religious/spiritual domain may be integrated. Psychological need fulfillment is in part a function of environmental conditions. Thus the path from the numinous to the fulfillment of such needs is not guaranteed by substantive religiosity alone. It is to this consideration that we shall now turn.

Faith Development as a Moderating Variable

Religious or spiritual development may be approached from multiple theoretical perspectives (Love, 2002), and each approach has particular strengths and limitations. The present study focuses primarily on the extensive work of James W. Fowler (1981), who details the construction of faith development theory. Just as the term religion has been transformed in modern usage from a verb to a noun (Wulff, 1997) Fowler argues that a similar phenomenon has occurred with the word 'faith'. Drawing from the work of Wilfred Cantwell Smith (1963) and the liberal Christian theology of Paul Tillich (1957) and Reinhold Niebuhr, Fowler argues that the colloquial understanding of faith has become equated with the term belief, which is interpreted as "an assent to propositions of dubious verifiability" (1991, p. 31). Fowler (1981, 1996) argues that it was during the Enlightenment that this understanding of belief became predominant, despite that the Latin *credo* or 'I believe' and the Greek *pisteuo* which can be translated as faith, similarly mirror an act of setting one's heart upon something. Faith, though once similar in meaning to the concept belief, is therefore distinct from the concept of 'belief' in the modern sense. Faith may reflect personal beliefs or give rise to particular beliefs, but faith itself is viewed as an

activity that extends beyond adherence to specific propositional content. Fowler (1981) contends that faith embodies the continual experience of our relation to the world as affected by our constructions of ultimate concerns that give shape and purpose to our lives. Faith development theory is therefore concerned with understanding the generic human process of constructing meaning (Fowler, Streib, & Keller, 2004) that is the essence of faith. This particular view is not without controversy (Dykstra & Parks, 1986) and there remain numerous unresolved questions pertaining to faith development theory (Streib, 2005). The present study does not aim to address such controversies, nor is it the intention of this study to promote a particular understanding faith. The present study does propose however, that the theoretical framework set forth by Fowler (1981) may provide insight into the extent to which substantive religiosity may lead to basic psychological need fulfillment. This section will thus detail critical elements of Fowler's theory that elucidate how distinctions among faith development may contribute to variation in basic psychological need fulfillment among individuals of equivalent status on substantive religiosity measures. First, an introduction to the guiding assumptions and stages of faith development theory are presented. Upon introducing the developmental sequence proposed by Fowler, the section will conclude with specific implications about this sequence on psychological need fulfillment.

Apart from being guided by the theological writings of Tillich and Niebuhr, Fowler (1991, 2001) was also influenced by the psychosocial developmental theory of Erikson and the structuralist views of Piaget and Kohlberg. Faith development theory reflects these influences as is indicated by Fowler's underlying assumptions and his views regarding the specific elements of faith. As previously discussed, Fowler (1981) was primarily concerned about the structure of faith, not the specific contents of one's faith. Given that faith is generally conceived as an activity of constructing meaning, Fowler believed that the structure that this meaning takes would be relatively consistent across multiple religious contents. In other words, under this view it is possible for individuals to structure the same religious contents differently, or to approach distinct contents utilizing similar structural characteristics. Though the

potential influence of contents on the structure of faith cannot be exclusively ignored (Fowler, 2004) the sequence of development portrayed by Fowler is indicative of hierarchical structural changes in the underlying form of meaning construction. Under this view it is therefore conceivable that two individuals may view the same Christian tenets (i.e. divinity of Christ) from qualitatively distinct perspectives. In other words, two individuals may display equal levels of religious commitment (i.e. substantive religiosity) while departing in the manner in which such a commitment is constituted as an orienting force in the construction of ultimate meaning and value in life. The seven aspects of faith identified by Fowler (1981) are central to understanding these distinctions.

Through a series of over 500 initial interviews, among a sample that is broadly representative of the American population, Fowler (1981) reported the existence of six stages that indicate changes in seven aspects of faith. Descriptions of these seven aspects of faith, as well as their hypothesized changes across development are depicted in Table 4. These seven aspects include form of logic, perspective taking, moral judgment, social awareness, locus of authority, form of world coherence, and symbolic function. Fowler (1981) originally suspected that changes in each aspect would be accompanied by changes in other aspects, thus forming a structural whole. This view has been supported by some factor analytic work (Snarey, 1991); nevertheless such assumptions remain questionable, particularly given that some individuals may utilize relatively complex aspects of faith to justify positions placed at lower levels of development (Fowler, 2001; Streib, 2001). The structural wholeness of the aspects of faith remains an empirical question (Adam, 2008; Fowler, Streib, & Keller, 2004), yet transitions in development are still assumed to be invariant and hierarchical. In other words, the development of each aspect of faith is thought to occur in a specific sequence with each subsequent stage subsuming the antecedent stage (Astley, 2000). Broadly speaking development may generally be characterized as a trajectory toward a greater recognition “of one’s interdependence and interconnectedness...beyond one’s perceptual scope” as well as “growing comfortable with and actually welcoming ambiguity and doubt that exists even within one’s tested convictions” (Love, 2002, p. 369). The sequence of development discussed by Fowler

(1981), and the underlying structural changes, may also signify an enhanced sense of autonomy, relatedness, and competence within the religious/spiritual domain. This developmental sequence will now be presented in detail.

Table 4

Changes in the Seven Aspects of Faith across Development

Aspect of Faith	Description	Developmental Changes
Form of logic	Mental operations for reasoning about the world	Shifts from concrete to more abstract and dialectical reasoning.
Perspective taking	Ability to see world from others point of view	Shifts from being self-centered to greater inclusion of multiple perspectives.
Moral judgment	Reasoning about moral issues	Reciprocity based judgments toward use of conventions and finally toward morality based on higher principles.
Social awareness	Mode of group identification	Inclusion of others like us toward an opening toward the claims of other traditions.
Locus of authority	Extent to which authority is internal or external.	Authority becomes increasingly internalized.
World coherence	How person constructs their worldview.	Movement from tacitly held view toward more explicit formation of beliefs.
Symbolic function	Perception and use of symbols	Symbols move from having singular to multi-faceted layers of meaning.

Fowler (1981) hypothesizes the existence of six stages extending beyond the initial foundation of faith that is anchored in caregiver relationships. Only four stages are prominent within adulthood, thus the present section will primarily focus upon changes that occur within this period. Descriptions of these stages are presented in Table 5. It will be noted however, that Fowler views the beginning of faith as

occurring within infancy wherein basic trust is formed within caregiver interaction. As the child ages the first stage of faith, or Intuitive-Projective faith takes form. At this stage a child has acquired the ability to form linguistic concepts and is immersed within a world of images without the constraints of logical demands. Within this perspective for example, images of God may be overtly personified or Hell may be viewed as a physical place underneath the earth. With the arising of operational thought or logical reasoning, emerges the second stage of development which is referred to as Mythical-Literal faith. Though this stage arises with operational thought, it is still commonly found within adult samples. This newfound ability to structure the world logically provides a framework for understanding the empirical limitations of previously held imaginative images. Such images however are confined by empirical limitations as they are viewed literally. Though Fowler (1991) tends to place religious fundamentalists within this category, fundamentalism poses unique challenges to faith development theory. For example, Streib (2001, 2005) contends that under this view it is difficult to account for the seemingly regressive feature of fundamentalism in that many religious fundamentalist apply advanced forms of thought to defend a mythical-literal faith. Such problems may be taken to suggest that “development...is altogether more complex, less teleological, and less linear than the structural-developmental representation” (Adam, 2008, p. 213). Whether a teleological view of development withstands empirical scrutiny or not, such qualifications may be unimportant to the contention that differences in the appropriation and structure of religious meaning may be beneficial for understanding variation in reported autonomy, relatedness, and competence within the numinous domain.

The third stage identified by Fowler (1981) is referred to as Synthetic-Conventional faith. Fowler proposes that this is typically first encountered during adolescence and often carried into adulthood. At the center of this perspective is the task of integrating a sense of identity that results from confronting the multiple images that others reflect about our self (Fowler, 1991). Relationships are thus prominent in this perspective in that an individual’s sense of self and faith are intricately tied to interpersonal dynamics. The content of one’s faith is thus defined by community or group identification, while remaining tacitly

held. This perspective remains largely unaware of the process through which views have formed, though arising paradoxes and inconsistencies may facilitate a critical evaluation of formerly held perspectives. This conscious subjection of formerly held views to critical reflection is the dominant characteristic of Individuative-Reflective faith. Fowler (1991) indicates that “to reach this stage, we have to question, examine, and reconstitute the values and beliefs that we have formed to that point in our lives. They become explicit commitments, rather than tacit commitments” (p. 38). Fowler also contends that movement into this perspective is denoted by a reconstitution of the self as that which is not completely defined by interpersonal relations.

The individuative-reflective stage is partly characterized by an effort to find a “tidy faith” that “may result in our collapsing inevitable paradoxes and tensions within our belief-system” (p. Astley, 2000, 11). An inability to find adequate solutions to such tensions may act as an impetus for adopting the Conjunctive faith perspective. This view is characterized by an appreciation for the inherent tensions involved in the construction of meaning, while illustrating a “greater openness to, and mutuality with, other worldviews and perspectives (p. 11). Such a view thus embodies a growing desire to reconcile the paradoxical elements of faith and a greater appreciation for the multifaceted, yet inherent ambiguity in knowing. Fowler (1991) indicates that with this perspective emerges a second naïveté in which an appreciation for the symbolic is reunited with the conceptual meanings derived via critical reflection. The final perspective, which labeled as Universalizing faith (Fowler, 1981), reflects a theologically informed teleological endpoint that is not typically observed in empirical investigations. However, according to Fowler (1991) within this stage paradoxes are reconciled and there is a complete broadening of perspective so that the self is essentially decentered, thus allowing one to be “grounded in a oneness with a power of being or God” (p. 40). Fowler argues that this process of decentering begins with mythical-literal stage and is denoted by an increasingly broadened interpersonal perspective. The universalizing perspective is thus no longer seeking value from the self as a center and instead functions in unity with what was previously perceived to be Other.

Table 5

Fowler's Stages of Faith Development within Adulthood

Stage	Description
Mythical-Literal	Emerges with concrete operational thought. This allows the construction of real from fantasy. Symbols have a singular meaning that often signify a literal empirical reality.
Synthetic-Conventional	Greater mutual perspective wherein the self is embodied within group identification and roles. Faith remains tacitly held and conforms to group prescriptions.
Individuative-Reflective	Self becomes identified apart from group identification and roles. Faith is subjected to rational examination. Though a person may still adhere to group beliefs and tenets they now reflect conscious choice. There is a tendency in this stage however, to negate the power of symbol.
Conjunctive Faith	Inability to find adequate resolution to paradox can incite a growing recognition of the limitations of previous constructions of faith. A striving to unite polarities emerges with a greater appreciation for symbolic functions. This stage also recognizes the limitations of broader societal characteristics and strives to understand faith from more inclusive social perspectives.

Though many of Fowler's ideas remain controversial (Adams, 2008; Dykstra & Parks, 1986; Hanford, 1993; Streib, 2001), it is not necessary to fully embrace each proposal in order to appreciate how differences in faith development may relate to basic psychological need fulfillment. As previously indicated, individuals may have equivalent substantive numinous characteristics, yet diverge in their faith development. In other words, the sequence of faith development portrayed by Fowler suggests that changes in the structure of faith may be indicative of differences in psychological need fulfillment. Even if one disagrees with the hierarchical developmental sequence provided by Fowler, it remains possible to treat each stage as a qualitatively distinct position or perspective of faith. In other words, the potential connection between faith development and basic psychological need fulfillment is not contingent upon whether faith develops in a hierarchical sequence. Though subsequent inferences made in this section are

not contingent upon such assumptions, the following outline will discuss faith in terms of a developmental sequence aligned with Fowler's view.

This discussion will first focus upon the need for autonomy, wherein an autonomous act or view is that which is fully integrated with one's self and is experienced as emanating from the self (Ryan, 1995). The initial stages describe by Fowler (1981) describe a perspective in which views are largely held for unknown reasons. In other words, the construction of meaning around centers of value and power that characterizes faith at these initial stages of development has not yet been subjected to critical examination. Centers of value and power are accepted, yet obscurity remains about the rationale for such acceptance. For example, synthetic-conventional faith is largely governed by social and cultural prescriptions. Since this perspective is not yet subjected to critical evaluation, the individual remains immersed within this view without being capable of stepping outside of it (see Kegan, 1982). Autonomy reflects the "extent to which people authentically or genuinely concur with forces that do influence their behavior" (Ryan & Deci, 2000, p. 40) and such concurrence appears to be limited given that has not yet actively chosen such positions (Astley, 2000). With the onset of individuative-reflective faith, an individual is capable of stepping outside normative prescriptions and roles to evaluate their adopted worldview. Fowler (1990) argues that the task of this stage is

...to put in place an executive ego, the "I" who manages and "has" all these roles and relations, yet is not identical with any one of them. The task is thus to take charge of one's own life. It means claiming a new quality of autonomy and responsibility. This does not necessarily mean "individualism," though in this country it is often interpreted in individualistic ways. It does mean the exercise of responsibility and choice in regard to the communities to which we belong. (p. 40).

Past this stage of development the contents of faith are an act of explicit choosing, and though they may still be influenced by relational factors, the adoption of a particular meaning system may be thought of as "endorsed at the highest level of reflective capacity" (Deci & Vansteenkiste, 2004, p. 25). Faith in the transition from the synthetic-conventional stage to the individuative-reflective stage indicates a shift in relative heteronomy toward greater experience of volition in the active construction of meaning.

Provided with such an account, it is reasonable to suspect that individuals at varying levels of faith development, irrespective of substantive dispositions toward the numinous may experience differences in the extent to which the need for autonomy within the religious domain is believed to be fulfilled.

A broadening of social perspectives is not only central to Fowler's (1981) conceptualization of faith, but a sense of interconnection is thought to be fundamental to spirituality (Tisdell, 2003) and other accounts of religious/spiritual development (Love, 2002; Streib, 2001). Focus will be maintained however, on Fowler's (1981) view of faith development. Throughout the course of faith development there is a movement from the view that social relations are governed by reciprocity to an eventual decentration of self that is characteristic of Fowler's teleological endpoint. In other words, the incessant tension born out of a growing recognition of paradox can eventually lead to the valuation and inclusion of a multiplicity of perspectives. Such a transition reflects something similar to the concept of xenosophia discussed by Streib (2010), which indicates a growing appreciation for the Other in the construction of meaning. Additionally, it is important to recognize that these relational aspects of development are also integral to concept of faith itself. According to Fowler (1981) faith is covenantal in that it

...is a relational enterprise...We do not commit ourselves—'rests our hearts upon'—persons, causes, institutions, or 'gods' because we 'ought to'....The centers of value and power that have god value for us...are those that confer meaning and worth on us and promise to sustain us in a dangerous world of power....Our commitments and trusts shape our identities....In each of the roles we play...we are linked to others in shared trusts and loyalties to centers of value and power (p. 18-19).

Our sense of relatedness or connection with others is thus central to the covenant that is faith under this view. Committing ourselves to particular centers of value is not only a relational act in itself, but this is not enacted in social isolation. Distinctions among the structural aspects of faith found across stages of development may thus be viewed as exemplifying a growing sense of the constrictions, yet illuminations resultant from the covenantal dynamics at the center of faith. Though Fowler's view may be criticized for placing cognition as the driving force of development (Streib, 2001), even if such criticisms were well

founded (Fowler, 2004), it does not negate the possibility that a cognitive reconstitution of relational dynamics may be an important aspect of faith development.

The abovementioned discussion elucidates how faith development may be accompanied by changes in the degree to which the need for autonomy and relatedness are believed to be fulfilled within the religious/spiritual domain. Though these inferences are solely derived from an analysis of the theoretical concepts guiding this study (Deci & Ryan, 2000; Ryan, 1995; Fowler, 1981), it is suggestive that both the need for autonomy and the need for relatedness may be critical for understanding changes in the construction of meaning around centers of value and power over time. A change in the extent to which autonomy is experienced appears to be clearly demarcated across stages of faith development. Though the relational aspects of faith are central to Fowlers' view, it is not as clear how the psychological *need* for relatedness would manifest across stage distinctions. Fowler (1981, 1991) does contend that primal faith, which is subject to the influence of caregiver interactions, provides a basic sense of trust. A need for relatedness may obviously be met at this stage, and it is possible that environmental nutriments for the fulfillment of this need may be equally met through distinct pathways at subsequent stages of development or across multiple contexts. An individual at the mythical-literal stage of faith may get this need met through reciprocity of interpersonal relations. In other words, though faith development may be accompanied by increased perspective taking, this broadened view may or may not be associated with perceived greater psychological need fulfillment despite an individual's adoption of a faith perspective that is more socially inclusive. This same line of reasoning may be applied to the psychological need for competence. Does the extent to which competence is believed to be fulfilled vary across distinct faith perspectives? Are particular faith perspectives fostered by environments supportive of basic psychological needs or is need fulfillment a consequence of adopting specific faith perspectives? Such questions remain open to empirical investigation.

Putting aside these pressing questions, the conception of faith development articulated by Fowler (1981), along with the theoretical proposals of Deci & Ryan (2000) provide a rationale for expecting that

inter-individual differences in faith development may be accompanied by variation in the extent to which basic psychological needs are fulfilled. To synthesize this view with the language of the multi-level interdisciplinary paradigm (Emmons & Paloutzian, 2003; Tsang & McCullough, 2003) individuals with equivalent dispositions toward the numinous (i.e. religious commitment) cannot be assumed to appropriate the same center of value and power in the same way. For example, individuals of equal religious commitment may display distinct stages of faith that are reflective of more or less autonomy, relatedness, and/or competence. The effect of religious commitment on the extent to which the basic psychological needs are fulfilled may therefore be moderated by faith development.

Summary of Model Specification

Investigations of the relationship between numinous variables and health related outcomes typically suffer from a dearth of theoretical guidance and a failure to consider the multidimensional elements of religious and spiritual constructs. Model specification should be conducted in light of theoretical conjecture and a failure to consider the multidimensional elements of the numinous inadvertently assumes that the numinous constructs themselves contribute nothing to understanding positive psychological outcomes. This situation may in part be rectified through reliance upon theory and an incessant effort to strive for conceptual clarity in the operationalization of the numinous. The present study utilizes proposals made by advocates of self-determination theory (Ryan, 1995; Deci & Ryan, 2001) and the multi-level interdisciplinary paradigm (Emmons & Paloutzian, 2003; Hill, 2005; Tsang & McCullough, 2003) in order to frame the study hypotheses. Inferences derived from these proposals imply that the effect of religious dispositions (i.e. substantive religiosity that is assessed with the religious commitment inventory) on positive psychological outcomes are mediated by the fulfillment of basic psychological need for autonomy, relatedness, and competence. The faith development theory, as articulated by Fowler (1981), suggests that individuals of an equal religious commitment may have qualitatively distinct approaches toward the construction of religious meaning. Specifically, inferences from this proposal suggest that these distinctions are in part differentiated by the extent to which

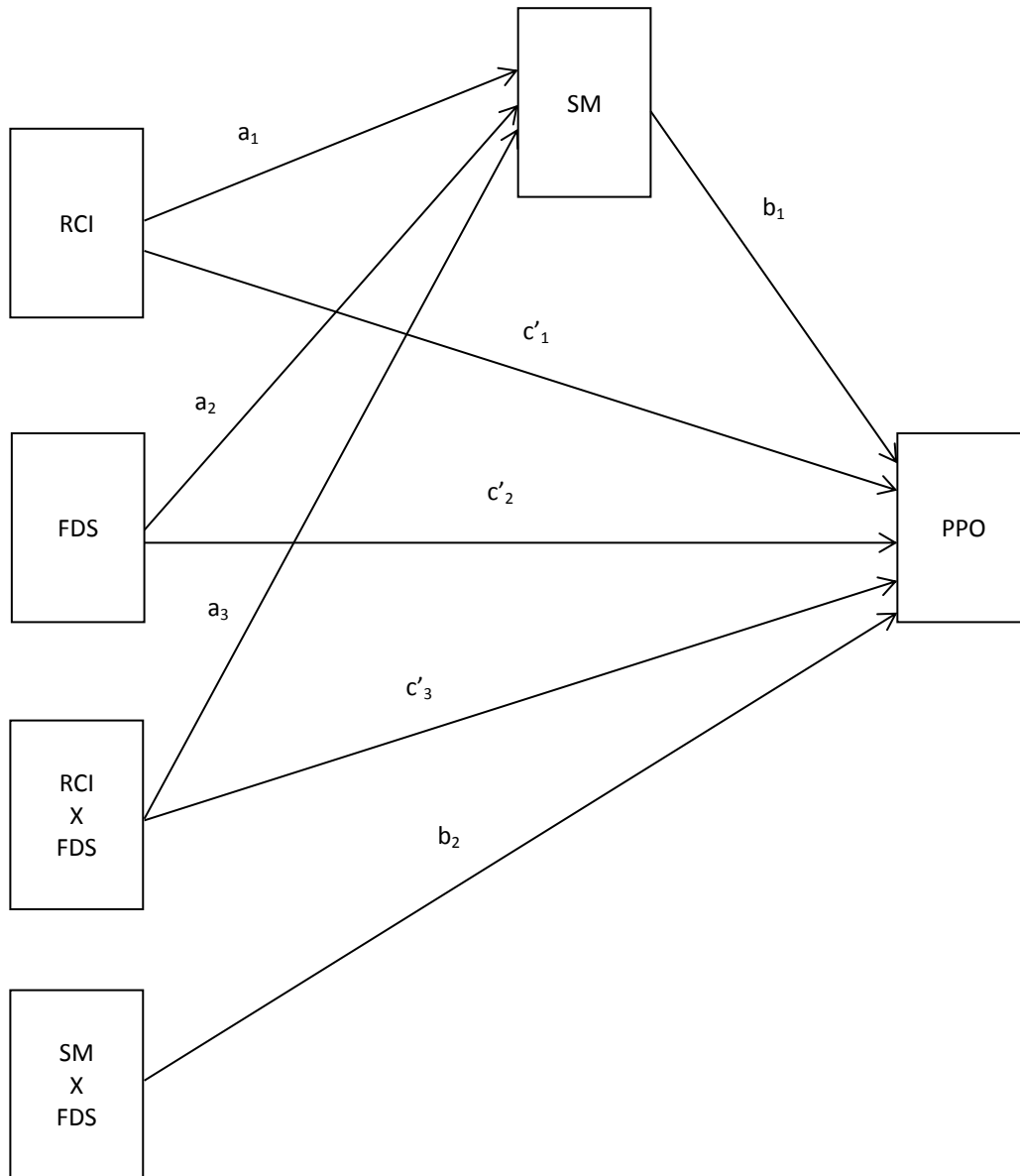
embodied faith perspectives are autonomous. Consequently, it is expected that the effect of religious commitment on the perceived fulfillment of autonomy will be moderated by levels of faith development. Given this specification, only the need for autonomy will be investigated as a mediator within the present study. However, instead of assessing the extent to which this need is generally said to be fulfilled (Gagné, 2003) this study utilizes religious/spiritual self-mastery (Hathcoat & Fuqua, 2012) as an indication of need fulfillment. The psychological need for autonomy however, is proposed to be universal (Ryan, 1995) thus it is expected that the fulfillment of this need will have a consistent effect on positive psychological outcomes, irrespective of faith development.

Figure 2 provides a path analytic model that specifies the study hypotheses. Details pertaining to the parameters of this model are further discussed in the methods section. It should be noted however, that positive psychological outcomes will be operationalized as both life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985) and meaning in life (Steger, Frazier, Oishi, & Kaler, 2006). Thus the model in Figure 1 will be examined independently for each positive psychological outcome. The choice to include these two outcomes is due to specific theoretical distinctions. Deci & Ryan (2001, 2008) distinguish outcomes associated with eudaimonic living (i.e. living in accordance with basic psychological need fulfillment) and outcomes associated with the pursuit of hedonic pleasure. Life satisfaction, which is typically identified as a cognitive component of subjective well-being (Eid & Larsen, 2008) is therefore not necessarily an outcome of eudaimonic living. This is also aligned with Aristotle's view in which subjective satisfaction may be an unintended by-product of eudaimonic living, but it is not guaranteed (Ryff, 2008). Within the context of this study meaning in life, though typically associated with with movements in existential psychology (Frankl, 1984), is conceived as an outcome of eudaimonic living. This choice is aligned with the view of Ryan and Deci (2000b), who in their conception of self-determination theory have sought the "conditions under which something becomes meaningful and coherent with respect to the self" (p. 325). Basic psychological need fulfillment is expected to facilitate these conditions, thus within the present study it is possible that different findings will emerge across each

measure of positive psychological outcomes. In other words, given the conception of eudaimonic well-being provided by Ryan & Deci (2001) it may be more likely that basic psychological need fulfillment is found to mediate the effect of religious commitment on meaning in life as opposed to this same effect upon life satisfaction. An additional aspect of the study will thus be to explore these divergent possibilities.

Figure 2

Path Analytic Model of the Moderated Mediation Hypothesis



Note: RCI = religious commitment inventory; FDS = faith development scale; SM = religious/spiritual self-mastery; PPO = positive psychological outcomes. Two models were examined. The first model utilized the presence of meaning in life as a PPO and the second utilized satisfaction with life as a PPO.

CHAPTER III

METHODOLOGY

It is the aim of the present study to examine a moderated mediation model deduced from proposals by self-determination theory (Deci & Ryan 2001; 2008a Ryan, 1995) and the multidisciplinary paradigm of numinous constructs (Emmons & Paloutzian, 2003; Hill, 2005; Tsang & McCullough, 2003). More specifically, the present study aims to assess whether the effect of substantive religious/spiritual measures on positive psychological outcomes are mediated by the extent to which religious/spiritual self-mastery is reported to be satisfied. It is further predicted that this mediation effect will be moderated by measures of functional religious/spiritual measures, which in this study draws upon the articulation of faith development provided by Fowler (1981).

Research Questions

1. What are the zero-order correlations are between substantive religiosity, functional religiosity, basic psychological needs, and positive psychological outcomes?
2. Is the effect of substantive religiosity on positive psychological outcomes mediated by expressed basic psychological need fulfillment?
3. Is there a statistically significant interaction between functional religiosity and basic psychological needs when predicting positive psychological outcomes?

4. Is there a statistically significant interaction between functional religiosity and basic psychological needs when predicting positive psychological outcomes?
5. If a significant interaction is found, what are the estimated conditional indirect effects of substantive religiosity/spirituality on positive psychological outcomes at specified values of functional religiosity/spirituality?
6. At what values of functional religiosity/spirituality do estimated indirect effects remain statistically significant?

Participants

A total of 683 undergraduate students participated in the present study. A few outliers ($n \approx 5$) were first removed by examining z -scores and box plots for study variables. Individuals with missing data on study variables were also removed before conducting the analysis. This was done because items on the faith development scale may not be relevant to populations outside a Judeo-Christian culture (Streib, 2005). All participants were told to answer each item to the best of their ability. Hence a failure to respond was assumed to indicate that these items may be irrelevant to participant experiences. Of the 683 participants 651 students are included in the final analysis. Of these participants the average age was 20.31 ($SD = 3.34$), and 47% indicated that they were male. Nearly 89% of the sample identified as Christian. Over 5% indicated that they were an atheist or agnostic, and 4% of the sample did not identify with any religious affiliation. Less than 1% identified themselves as either Muslim, Jewish, or Buddhist, and when asked for a religious affiliation about 1% marked an “other” category. With respect to grade classification most participants identified themselves as freshmen (i.e. 36%), followed by sophomores (i.e. 29%), juniors (i.e. 18%), and seniors (i.e. 17%).

Measures

All participants were presented with a battery of measures relevant to the moderated mediation hypothesis investigated within the present study. This battery includes scales for substantive religiosity

(i.e. independent variable), basic psychological need fulfillment (i.e. mediator variable), positive psychological outcomes (i.e. dependent variables), and functional religiosity (i.e. moderator variable).

Substantive religiosity/spirituality. Within the present study substantive religiosity is operationalized with the *religious commitment inventory-10* (RCI-10) (Worthington et al., 2003). The RCI-10 was developed by Worthington et al. (2003) after a model of religious commitment constructed primarily within a counseling context (Worthington, 1988; Worthington & Sandage, 2001). Religious commitment is defined as “the degree to which a person adheres to his or her religious values, beliefs, and practices and uses them in daily living” (Worthington et al., 2003, p. 85). The RCI-10 has numerous items that are similar to other religious motivation scales (Allport & Ross, 1967) along with indicators of behavioral involvement in traditional religious activities. Sample items include “My religious beliefs lie behind my whole approach to life” and “I enjoy working in the activities of my religious organization”. Each question is rated on a 5 point scale ranging from 1 = not at all true of me to 5 = totally true of me.

Worthington and colleagues (2003) report both interpersonal and intrapersonal factor among a sample college students. Later confirmatory factor analyses among samples of community church-attenders and individuals engaged in Christian based counseling supported a two factor structure. Correlations among these factors however, tend to be high (e.g. .70 - .80), thus leading the authors to argue that items may be summed in order to create an overall strength of commitment score. Internal consistency estimates, as indicated by Cronbach’s alpha, is typically above .90 and test-retest correlations among a sample of Christian university students was found to be .84 across a 5 month interval.

Worthington and colleagues have found that RCI-10 scores are positively associated with single item measures of religious participation, church attendance, and the ranking of salvation as a prominent value. Highly committed individuals were also more likely to have increased empathy and lower levels of revenge for a hypothetical robber. Religious commitment, as operationalized by the RCI-10, may also be a protective factor in alcohol abuse (Burriss, Sauer, & Carlson, 2011) and has moderated the negative relationship between attachment avoidance and marital adjustment (Lopez, Riggs, Pollard, & Hook,

2011). In a small sample of Latter Day Saint Polynesians the RCI-10 was positively correlated with a having a purpose in life and self-acceptance (Allen & Heppner, 2011). Though little additional evidence could be found that specifically correlated the RCI-10 with other positive psychological outcomes, it is worthy to note that some items on the RCI-10 are commonly employed in other measures (Allport & Ross, 1967; Blane & Crocker, 1995; Hoge, 1972), or as single item indicators, that are commonly associated with such outcomes (Myers, 2000, 2008).

Basic psychological needs. Self-determination theory hypothesizes the existence of at least three basic psychological needs that include the need for autonomy, relatedness, and competence (Ryan, 1995). Though there exists a general need satisfaction scale (Gagné, 2003; Kashdan, Julian, Merritt, & Uswatte, 2006), which assesses the extent to which an individual feels that each of these needs are typically satisfied, only one study could be identified that previously correlated religious commitment and general basic psychological need satisfaction (Trent & King, 2010). Though they failed to find a statistically significant correlation among these constructs, greater attention should be given to domain specific elements of basic psychological need satisfaction. Domain specific adaptations of the scale exist for perceived need satisfaction in relationships (La Guardia, Ryan, Couchman, & Deci, 2000) and physical education courses (Ntoumanis, 2005); however, there is currently no known existing measure of perceived need satisfaction specific to the numinous domain (Ed Deci, personal communication, July 31, 2011). For this reason, the general need satisfaction scale was adapted to the religious/spiritual domain and pilot tested before being implemented within the current study (Hathcoat & Fuqua, 2012).

Each basic psychological need was defined to be congruent with the religious/spiritual domain. Autonomy within the religious domain was defined as the sense that one's religious/spiritual worldview was an act of one's own choosing; whereas competence was defined as the belief that one is efficacious in evaluating and/or making decisions pertaining to religious/spiritual worldviews. Sample items for the autonomy dimension include "I feel like I am free to decide what religious/spiritual views to follow" and "I have had plenty of opportunities to decide for myself what religious/spiritual worldviews to accept".

Sample items for the competence dimension include “I am good at considering religious/spiritual matters” and “I feel very capable of determining what religious/spiritual views fit me best”. Within the religious/spiritual domain evidence suggests that both social support (Argyle, 1999; Emmons, 1999b) and a perceived relationship to God (Mackenzie, Rajagopal, Meibohm, Levizzo-Mourey, 2000) are associated with positive psychological outcomes. Given these considerations it was proposed that the need for relatedness within the religious/spiritual domain may be met with the satisfaction of two dimensions. The first dimension was defined by a felt or perceived connection to others that resulted from an individual’s religious/spiritual worldview whereas the second dimension is defined by a felt or perceived connection to a divine being or reality. Sample items for the perceived connection to others dimension include “I feel strongly connected to other people as a result of my religious/spiritual worldview” and “My religious/spiritual views have fostered many close relationships”. Sample items of the perceived connection to a divine being or reality include “My religious/spiritual worldview gives me a sense of being connected to the divine” and “I feel closer to a divine reality or being through my religious/spiritual worldview”.

A total of 24 items were written (i.e. six items per dimension) with the intention of reducing the number of items to approximately three per dimension. Psychometric properties of the scale were examined in a pilot study wherein 183 undergraduate students were conveniently selected at a large Land Grant Institution within the Midwest. Participants were also administered the Francis Attitudes toward Christianity scale (Francis, 1993), selected items from the general basic psychological needs questionnaire (Gagné, 2003), the satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1985), eight items from the Oxford Happiness Questionnaire (Hills & Argyle, 2002), and the meaning in life questionnaire (Steger, Frazier, Oishi, & Kaler, 2006). After an item reduction analysis a two factor structure was judged as optimal on the remaining 15 items (Hathcoat & Fuqua, 2012). The first factor contained eight items referring to a sense of interpersonal and divine connection, and this factor was thus named religious/spiritual relatedness. The second factor contained seven items referring to both a sense

of competence and autonomy and this factor was thus named religious/spiritual self-mastery.

Preliminary validity evidence found that these factors jointly predicted indicators of religious/spiritual integration after controlling for general psychological need fulfillment (see Appendix A for results of factor analysis on current sample).

Positive Psychological Outcomes. As previously indicated, positive psychological outcomes are broadly conceived as subjective well-being (Eid & Larson, 2008) and outcomes associated with eudaimonic living (Deci, Huta, & Ryan, 2008). Within the current study subjective well-being is operationalized with the satisfaction with life scale (Diener, 1984) whereas the meaning in life questionnaire (Steger, Frazier, Oishi, & Kaler, 2006) is used to assess outcomes associated with eudaimonic living.

The *Satisfaction with Life Scale* (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) contains 5 items that are aimed to assess global, and thus integrative judgments about the overall conditions of life (Diener, 2009). Since subjective well-being contains both a hedonic (i.e. affect) (Kahneman, et al., 1999) and cognitive component (Diener, 1984; Larson & Eid, 2008), the satisfaction with life scale reflects the latter aspect of subjective well-being. The SWLS was constructed so that individuals may utilize their own criteria in the assessment of life circumstances (Diener, Emmons, Larsen, & Griffin, 1985), and is thus philosophically consistent with views in which the good life reflects the idiographic considerations of each individual (Haybron, 2008; Pavot & Diener, 2008). Individual responses may not only reflect relatively stable predispositions such as personality, but are also subject to change across existing life circumstances (Larson & Eid, 2008; Pavot & Diener, 2008). Accordingly, an individual's response to each item is conceived as "not simply judgments about well-being, they are *endorsements*, and they embody not just our view of the quality of our lives, but also our ideals concerning how to respond to our lives" (Haybron, 2008, p. 33).

Each item on the satisfaction with life scale is rated on a Likert-type scale (1 = strongly disagree to 7 = strongly agree). Sample items include “In most ways my life is close to my ideal” and “The conditions of my life are excellent”. Possible scores range from 5 to 35, with the midpoint being a score of 20. Normative scores among nonclinical samples typically range from 23 to 28 (Pavot & Diener, 1993), thus indicating that total scores tend to be slightly negatively skewed. When developing the scale, Diener and colleagues (1985) reported a 1 factor solution that accounted for 66% of the variance. Since this original study a 1 factor solution has been supported across multiple samples from several countries (Pavot & Diener, 1993, 2008). Pavot and Diener also report that life satisfaction scores are relatively stable across time, with test-retest coefficients of .54 across a 4 year period and ranging from .64 to .84 across 1-2 month intervals. In a reliability generalization study Vassar (2008) reported an average alpha coefficient of .78, with a 95% confidence interval of .77 to .81. Numerous studies suggest that overall life satisfaction scores have small to moderate correlations with various measures of religiosity (Diener, 2009; Headey, Schupp, Tucci, & Wagner, 2010; Hicks & King, 2008; Hong & Giannakopoulos, 1994; Myers, 2008; Nico & Hutsebaut, 2005; Parks, 2005b; Tucci, & Wagner, 2010).

The *Meaning in Life Questionnaire* (Steger, Frazier, Oishi, & Kaler, 2006) consists of ten items reflecting both the presence and search of meaning in life. Meaning in life is defined as the “sense made of, and significance felt regarding, the nature of one’s being and existence” (p. 81). Meaning is therefore construed as the sense that life is comprehensible, significant, and purposeful. The search for meaning is defined “as the strength, intensity, and activity of people’s desire and efforts to *establish and/or augment* their understanding of meaning, significance, and purpose of their lives” (Steger, Kashdan, Sullivan, & Lorentz, 2008, p. 200). Items are rated on a 1-7 scale ranging from 1 = absolutely untrue to 7 = absolutely true. Sample items from the presence of meaning subscale include “I understand my life’s meaning,” and “My life has a clear sense of purpose”. Sample items from the search for meaning subscale include “I am looking for something that makes my life meaningful” and “I am always looking to find my life’s purpose”.

Steger and colleagues (2006), through a series of studies, provide support for the hypothesized two factor structure using both exploratory and confirmatory factor analytic procedures across independent samples. Internal consistency estimates, as indicated by Cronbach's alpha, tend to range from .82 to .87 across each subscale. A multitrait-multimethod design was also used to investigate the convergent and discriminant validity of the MLQ. This analysis indicated that the MLQ had strong convergent validity across multiple raters, and tended to have a high level of discrimination from positive psychological outcomes. The presence of meaning and search for meaning subscales were found to be highly stable across a one month period, with test-retest correlation of .70 and .73 respectively (Steger, et al., 2006). Interestingly, both the presence of meaning and search for meaning subscales were relatively stable approximately 1 year later in an undergraduate sample, with test-retest correlations of .41 and .50 respectively (Steger & Kashdan, 2007).

Distinct patterns of correlations are reported across the two subscales. For example, Steger and colleagues (2006) indicate that presence of meaning is positively related to life satisfaction and intrinsic religiosity, yet search for meaning was uncorrelated with intrinsic religiosity and had a small negative correlation with life satisfaction. Similar patterns have been replicated in subsequent studies (Steger & Kashdan, 2007; Steger, Pickering, Adams, Burnett, Shin, Dik, & Stauner, 2010). Religious commitment and belief in a transcendent reality tends to be associated with having meaning (Martos, Thege, & Steger, 2010) and slightly negatively related with a search for meaning (Steger et al., 2010). The relationship between presence and search for meaning to positive psychological outcomes is complex; though in general Steger, Kashdan, Sullivan, and Lorentz (2008) found among cross-sectional data that presence of meaning tended to be positively related with such outcomes while a search for meaning was either unrelated or negatively related to these outcomes. Within the present study, the analysis solely focuses upon the presence of meaning dimension of the meaning in life questionnaire as the dependent variable.

Functional religiosity/spirituality. Functional religiosity is operationalized with the *Faith Development Scale* (FDS) (Leak, Loucks, & Bowlin, 1999), an eight item index of faith development as

initially conceived by James Fowler (1981). Leak and colleagues rationally constructed items to represent either Fowler's stages two and three level of development or conversely the higher stages of four and five. Broadly speaking, according to Fowler's theory stages two and three are denoted by tacitly held religious views that are largely influenced by interpersonal conventions and/or concerns. At stages four and five that which was previously tacit is now explicitly subjected to critical examination. With this evaluation perceived inconsistencies and paradoxes arise, which is accompanied by both the belief that religious views are more tentative and a growing appreciation of the value of diverse religious perspectives. The FDS requires individuals to choose one out of two statements (i.e. a level four or five statement is paired with a level two or 3 statement). A sample statement reflecting higher faith development is "It is very important to me to critically examine my religious beliefs and values," whereas a sample statement indicating lower levels of faith development is "It is very important to me to accept the religious beliefs and values of my church". Choices that reflect higher levels of faith development receive one point, whereas choices that correspond to lower levels of faith development receive zero points. The FDS thus has a possible range of 0-8, with higher scores indicating a greater preference for statements reflecting higher faith development.

Leak and colleagues report that FDS items were examined for content validity among two judges who have taught Fowler's theory. These judges consistently rated each of the items as reflecting either high or low levels of faith development. Coefficient alpha typically ranges from .71 to .75, thus providing evidence of adequate internal consistency across item responses among numerous samples. Leak and colleagues (1999) also state that among a small sample of undergraduate students ($N = 140$) a one factor solution was judged to be optimal. A one factor solution has also adequately fit observed patterns in inter-item correlations using confirmatory factor analytic procedures across two independent samples of undergraduate students (Leak, 2008). In terms of concurrent validity FDS scores have been positively associated with taking a questioning approach toward religious issues, and negatively related to extrinsic religiosity and right-wing authoritarianism (Leak, et al., 1999; Leak & Randall, 1995). Evidence

indicates that average total FDS scores significantly increased across freshman and senior years among a sample of undergraduate students attending a Christian university, and similar increases were found among the average responses for each individual item of the FDS (Leak, 2003). Though FDS scores were not significantly related to a measure of intrinsic religiosity (Leak et al., 1999), most correlations with relevant constructs reflect patterns that would be expected by Fowler's theory (Parker, 2006). One limitation with the FDS however, is that items have "a narrow focus on Christian belief systems" (Streib, 2005, p. 106) thus limiting their utility with other populations. For example, many items assume some identification with a church (e.g. "I believe that my church has much to offer, but other religions can also provide many religious insights") and may therefore not apply to individuals identifying with religions outside a Judeo-Christian cultural context. For this reason all participants were asked to answer each item to the best of their ability. A failure to respond is therefore assumed to reflect difficulty with item content.

Procedures

Undergraduate students were recruited from a large land-grant institution within the Midwest. After receiving IRB approval (Appendix B) students were recruited using an email solicitation script sent to faculty and graduate student teachers (Appendix C). As indicated by the email solicitation script it was preferred to sample adult students in class, though a link to an online survey was also provided as an alternative format. All students participating in class were provided an information sheet informing them about the nature of the study, as well as their rights as research participants (Appendix D). Online participants were also informed of their rights as a research participant and told about the nature of the study before participating (Appendix E). All participants were offered a chance to win 1 of 10 twenty dollar gift cards to a local vendor as an incentive. Ten participants were randomly selected for the gift card after completing data collection. There were a total of 62 students who participated in the online survey and 683 participants recruited in classrooms. The 62 online survey participants were disregarded from all subsequent analyses to minimize a potential method effect.

Some evidence suggests that responses to measures of subjective well-being may be influenced by the order in which questions are presented (Schwarz, 1999), though such effects are typically small (Schimmack & Oishi, 2005). A recent study however, indicated that Christians randomly assigned to religious priming (i.e. self-identify religious affiliation) reported a greater experience of love than those who were randomly assigned to identify their religious affiliation after responding to questions pertaining to their emotional experiences (Kim-Prieto & Diener, 2009). Given this evidence it is important to examine the possibility that the order in which items are presented may influence participant responses. Two packets of surveys were therefore created with each packet systematically altering the order in which participants respond to specific items. Form A was constructed so that participants answered religious/spiritual items at the end of the survey, whereas Form B was constructed so that participants responded to religious/spiritual items at the beginning of the survey. The only exception to this rule was four items pertaining current affect. These items were included at the beginning of both forms given that current affect may change throughout the course of taking a survey. Each packet was randomly distributed to participants. Prior to analyses differences in measures of positive psychological outcomes were investigated across the two survey packets.

An order effect is indicated if, on average, participants receiving Form B scored higher on life satisfaction and the presence of meaning in life than participants receiving Form A. Of the respondents 347 received Form A and 336 received form B. When creating composite life satisfaction and presence of meaning in life scores listwise deletion was conducted in order to handle missing data. Form A had an average life satisfaction score of 26.64 ($SD = 5.84$) whereas Form B participants had an average life satisfaction score of 26.12 ($SD = 5.68$). An independent sample t-test indicated that these differences were not statistically significant $t(671) = 1.155, p = .249, d = .09$. Form A participants had an average presence of meaning in life score of 26.26 ($SD = 6.40$) whereas Form B participants had an average presence of meaning in life score of 26.27 ($SD = 6.00$). These differences were also not statistically significant $t(679) = -.012, p = .991, d = .0009$.

It is possible that individuals who participated in the pilot study, which aimed to construct a measure of basic psychological needs within the religious/spiritual domain, may once again be participants in this larger research project. Given this information, it is possible that a practice effect (Snedden, 1931) may influence responses among individuals that participated in both studies. Practice effects are typically a concern in ability testing, or experimental conditions in which participants are subjected repeatedly to the same treatment. Practice effects are indicated when individuals who have taken a test twice tend to score higher than individuals that have only taken a test only once (Maassen, Bossema, & Nico, 2009). Changes in average differences across testing occasions may be used to assess practice effects, though such assessment techniques lead to psychometric puzzles. For example, it is difficult to disentangle changes in participant scores that are attributed to practice, from true changes in the construct that is being measured (Reeve & Lam, 2005). Though the extent to which participants would improve from practicing responses to likert-type items reflecting their religious and spiritual worldviews may be minimal, it is important to control for this possibility.

The design of the pilot study was not amenable to tracking the same participants across time. However, an estimation of a potential practice effect may still be approximated. Within the current study individuals were asked whether they have participated in a research study pertaining to religious and/or spiritual worldviews within the past year. A potential practice effect would be indicated if participants that had participated in a previous study had, on average, higher scores on measures used across both studies. In other words, a practice effect may be indicated if individuals that participated in two studies pertaining to religious and spiritual worldviews within the past year tended to have higher basic psychological needs, life satisfaction, and meaning in life than those individuals that indicated that they have not participated in a similar study within the past year. There were a total of 78 participants that indicated that they had participated in a research study pertaining to religious and spiritual worldviews within the past year. Former participants had an average life satisfaction score of 26.71 ($SD = 5.28$) and non-former religious/spiritual participants had an average life satisfaction score of 26.36 ($SD = 5.76$).

These differences were not statistically significant $t(657) = .515, p = .607, d = .04$. Former participants had an average presence of meaning in life score of 26.15 ($SD = 6.23$) and non-former participants had an average presence of meaning in life score of 26.34 ($SD = 5.76$). These differences were also not statistically significant $t(659) = -.263, p = .793, d = .02$. Former participants had an average religious/spiritual self-mastery factor score of .05 ($SD = 1.03$) and non-former religious/spiritual participants had an average self-mastery factor score of .01 ($SD = 0.90$). These differences were not statistically significant $t(660) = .319, p = .750, d = .02$. Former participants had an average relatedness factor score of .29 ($SD = .84$) whereas non-former participants had an average score of -.01 ($SD = .90$). These differences were statistically significant $t(660) = 2.656, p = .008, d = .21$ and indicate a potential practice effect for the relatedness factor.

Two points of interest are worth noting. First, before participating in the study all participants were told that this research concerned their religious and spiritual worldviews. It is possible that this statement made religiosity/spirituality salient, irrespective of the particular form that was distributed to participants. Subsequent research should not eliminate an order effect as a viable possibility. Secondly, the pilot study was not conducted with the intention of tracking participants across time. Though these participants indicated that they had participated in religious/spiritual research within the past year, it cannot be concluded that these participants necessarily received the same items. It is of interest to note however, that former religious/spiritual participants, tended to score higher on the relatedness factor than non-participants. This would seem to support a practice effect, though a practice effect is not the only defensible interpretation of this result. For example, it is possible that a self-selection bias may be introduced within the study. Participation in research is typically voluntary; hence participants who have taken part in former religious/spiritual studies may be more interested in religious and spiritual worldviews. These participants may also be more likely to report greater levels of religiosity and/or spirituality. With respect to the extent to which individuals considered themselves to be spiritual, former religious/spiritual research participants ($M = 5.83, SD = 1.40$) when compared to non-former

religious/spiritual participants ($M = 5.31$, $SD = 1.75$) had on average higher levels of spirituality $t(660) = 3.01$, $p = .003$, $d = .23$. No statistically significant differences were found with assessing the respect to a single item indicator extent to which one identified as religious. However, these single item indicators were utilized across both studies thus confounding their interpretation. Put differently, it is not clear whether differences in spirituality reflect a self-selection bias or a practice effect.

These findings show a need to further investigate potential practice effects with respect to religious/spiritual constructs. Specific attention should be given to the meaning of practice effects with these measures. Practice effects appear reasonable in the context of achievement and ability testing, but an articulation of practice effects with religious/spiritual constructs remains unclear. How would exposure to religious/spiritual items prepare one for subsequent exposure to the same indicators and thereby enhance observed scores? Examination of these challenging questions remains the task for subsequent research.

Moderated Mediation Analytic Procedures

Although moderation and mediation are widely used as relatively distinct analytic techniques (Baron & Kenny, 1986; Aiken & West, 1991; Fairchild & McQuillin, 2010; MacKinnon, Fairchild, & Fritz, 2007), in recent years statistical models have been refined to concurrently investigate these hypotheses (Edwards & Lambert, 2007; MacKinnon, 2008; Muller, Judd, & Yzerbert, 2005). Before presenting the analytic framework guiding the present study, it is first necessary to clarify some terminology. A mediation effect, “or in indirect effect is said to occur when the causal effect of an independent variable (X) on a dependent variable (Y) is transmitted by a mediator” (Preacher, Rucker, & Hayes, 2007, p. 186). A moderator effect is indicated when the effect of an independent variable on a dependent variable changes across levels of a third variable (Aiken & West, 1991). A mediating variable is thus theoretically conceived as existing within the causal pathway from an independent variable to a dependent variable whereas a moderating variable is not involved in the causal pathway between two

variables (MacKinnon, Fairchild, & Fritz, 2007). Conceptually, there are various ways to combine a mediation and moderation hypothesis (Preacher, Rucker, & Hayes, 2007), though they may be analytically subsumed under a common framework (Edwards & Lambert, 2007; Fairchild & MacKinnon, 2009). At the conceptual level a distinction is made between a mediated moderator and a moderated mediator. A *mediated moderator* occurs when a moderation effect is first detected, and the research question aims to understand the mechanism through which moderation occurs. A *moderated mediation* hypothesis on the other hand will typically first note a mediation effect that is then hypothesized to differ at distinct levels of a moderating variable. Given that the present study hypothesizes the former of these effects, this section will specifically focus upon analytic procedures relevant to this investigation. In order to comprehend how mediation and moderation may be analytically combined however, it is first necessary to present the basic mediation and moderation model. This in turn will be followed by an overview of the analytic procedures specifying the moderated mediation hypothesis.

There are multiple statistical approaches to investigating mediation effects (Baron & Kenny, 1986; Brett, 1984; MacKinnon, 2008), though evaluation of a simple mediation effect may be done by estimating three linear regression equations. For the sake of both consistency and clarity notation will include variables that are measured within the present study. Within the context of the present study, the effect of religious commitment (RCI) on positive psychological outcomes (PPO) is hypothesized to be mediated by the extent to which religious/spiritual self-mastery is believed to be fulfilled within the numinous domain (SM). Interpretation of each parameter is provided with each predictor being mean centered. The three linear regressions for examining a mediation effect are presented below:

$$PPO = a_0 + a_1 RCI + e_1 \quad (1)$$

$$SM = b_0 + b_1 RCI + e_2 \quad (2)$$

$$PPO = c_0 + c' RCI + c_1 SM + e_3 \quad (3)$$

Equation 1 illustrates the unconditioned effect of religious commitment on positive psychological outcomes. This unconditioned effect is represented by parameter a_1 , or the regression coefficient when a

positive psychological outcome is regressed on religious commitment. The parameter estimate a_0 is equal to the intercept of equation 1 and indicates the predicted positive psychological outcome for an individual with an average level of religious commitment. Equation 2 specifies the overall effect of religious commitment on perceived self-mastery, or the mediating variable. Within equation 2 b_1 indicates the direct effect of religious commitment on the mediating variable and b_0 indicates the predicted self-mastery for an individual with an average level of religious commitment. Equation 3 examines the simultaneous prediction of positive psychological outcomes from both religious commitment and felt autonomy. Parameter c' indicates the effect of religious commitment on positive psychological outcomes while controlling for self-mastery and c_1 indicates the effect of self-mastery on positive psychological outcomes while controlling for religious commitment. The intercept of equation 3, or c_0 indicates the predicted level of positive psychological outcomes for an individual with an average level of religious commitment and self-mastery. Within each of the three equations e_i indicates the residual.

There are several strategies that can be used to investigate the presence of a mediation effect. Generally speaking mediation analysis entails an examination of the functionally equivalent $a_1 - c' = (c_1)(b_1)$ (MacKinnon et al., 1995). The left side of this equation reflects the difference between the overall effect of religious commitment on positive psychological outcomes and this same effect once it has been statistically controlled for autonomy. This equation indicates that the size of this difference is equivalent to the overall indirect effect, which is provided by the product of c_1 and b_1 . In other words, the reduction in the effect of the independent variable on the dependent variable that one obtains by controlling for the mediator is equivalent to the indirect effect. It is possible to calculate a standard error around this product term in order to test the indirect effect for statistical significance (Sobel, 1982); however, the product term is not normally distributed, especially among small samples (MacKinnon, Lockwood, & Hoffman, 2002). This problem can be resolved however, through a bootstrapping technique, which does not require such assumptions (MacKinnon, Lockwood, & Williams, 2004; Mallinckrodt, Abraham, Wei, & Russell, 2006; Preacher, Rucker, & Hayes, 2008). Bootstrapping is a

resampling strategy in which the observed covariance matrix is treated as a population. From this population N samples corresponding to the original sample size are taken and for each sample an indirect effect is calculated. The sampling distribution of the indirect effect allows the construction of confidence intervals and evidence for a mediation effect is provided if the confidence interval for the indirect effect fails to contain 0. Within the present study a combination of these techniques will be employed, so that first the point estimate of the indirect effect is tested for statistical significance, and these conclusions will then be substantiated using the bootstrapping procedure.

A simple moderation hypothesis is indicated when the magnitude and/or direction of a zero-order correlation differs as a function of a third variable (Hoyt, Imel, & Chan, 2008). A simple moderation hypothesis, as applied within the current study, states that the correlation between religious commitment and religious/spiritual self-mastery will vary as a function of faith development. The following simple linear regression equation illustrates this hypothesis:

$$SM = a_0 + a_1RCI + a_2FAI + a_3RCI \times FAI + e_1 \quad (4)$$

Similar to the interpretation of the equations specifying the mediation hypothesis all parameter estimates will be interpreted with the assumption that the predictors have been mean centered. Within equation 4 a_1 is equal to expected increase in self-mastery for every unit increase in religious commitment among an individual with an average level of faith development. Parameter estimate a_2 indicates the expected increase in autonomy for every unit increase in faith development for an individual with an average level of religious commitment. Since faith development is conceptualized as the moderator variable, parameter estimate a_3 may be interpreted as the degree to which the correlation between religious commitment and self-mastery is expected to change at different levels of faith development. Follow up analyses for a statistically significant moderation effect are detailed in Aiken & West (1991) and usually include graphing simple slopes at theoretically meaningful values of the moderating variable. With a continuous moderating variable these values often correspond to three points, which include the mean, one standard deviation above the mean, and one standard deviation below the mean.

The discussion in this section thus far provides the groundwork for understanding how these distinct hypotheses may be synthesized in an overall analytic approach. As with mediation analysis, several authors have detailed how these approaches may be combined (Edwards & Lambert, 2007; MacKinnon, 2008; Muller, Judd, & Yzerbert, 2005). From this literature it is possible to derive three conceptually distinct possibilities that are relevant to the moderated mediation hypothesis investigated within this study. First, it is possible that faith development moderates the effect of religious commitment on autonomy, but does not moderate the effect of autonomy on positive psychological outcomes. This possibility is consistent with the hypotheses set forth in the present study. Second, it is possible that faith development moderates the effect of autonomy on positive psychological outcomes but does not moderate the effect of religious commitment on autonomy. Third it is possible that faith development moderates both the path from religious commitment to autonomy and the path from autonomy to positive psychological outcomes. These latter two possibilities are inconsistent with the hypotheses set forth in the present study. All of these possibilities however, will be investigated in the present analysis.

The analytic procedures for investigating these possibilities will generally follow a model provided by Preacher, Rucker, & Hayes (2007), though this model is also fairly consistent with that which is discussed by Fairchild & MacKinnon (2009). From a path analytic perspective two equations can be used to investigate a moderated mediation hypothesis:

$$SM = a_0 + a_1 RCI + a_2 FAI + a_3 RCI \times FAI + e_1 \quad (5)$$

$$PPO = b_0 + c'_1 RCI + c'_2 FAI + c'_3 RCI \times FAI + b_1 SM + b_2 SM \times FAI + e_2 \quad (6)$$

The parameter estimates depicted in equation 5 are equivalent to that which was discussed in equation 4.

For this reason, the estimates given in equation 6 will be elaborated. First, c'_1 indicates the expected increase in positive psychological outcomes for every unit increase in religious commitment for an individual with an average level of faith development and autonomy. Analogously c'_2 indicates the expected increase in positive psychological outcomes for every unit increase in faith development for an

individual with an average level of religious commitment and autonomy. The parameter estimate c'_3 indicates the extent to which the direct effect of religious commitment is moderated by levels of faith development. Estimate b_1 indicates the direct effect of autonomy on positive psychological outcomes for individuals with an average level of religious commitment and faith development, while the parameter estimate b_2 indicates the extent to which the direct effect of autonomy on positive psychological outcomes varies across levels of faith development.

The statistical significance of two parameter estimates are used to identify a moderated mediation hypothesis, and include a_3 from equation 5 and parameter estimate b_2 from equation 6. The statistical significance of a_3 would indicate that the direct effect of religious commitment on autonomy is moderated by faith development whereas the statistical significance of b_2 would indicate that the direct effect of autonomy on positive psychological outcomes is moderated by faith development. The statistical significance of a_3 and b_2 is not predicted by the study since self-determination theory hypothesizes that basic psychological needs are universal (Deci & Ryan, 2001). Similarly, the sole statistical significance of b_2 would also fail to be aligned with the study hypotheses. Given the framework set forth in the current study it is anticipated that a_3 , as opposed to b_2 will be statistically significant. A moderation hypothesis may also be supported given the statistical significance of c'_3 , and though this would not be contrary to the study hypotheses it is not specifically predicted from the theoretical framework guiding this analysis. Given the statistical significance of either a_3 and/or b_2 follow-up tests were conducted that are aligned with the procedures described by Preacher, Rucker, & Hayes (2007).

First, the indirect effect of religious commitment to positive psychological outcomes will be assessed without the inclusion of moderating variables. This will be examined using point estimates, as well as the bootstrapping procedures previously discussed. Given a statistically significant indirect effect equations 5 and 6 will be estimated in order to investigate the moderated mediation hypotheses. If evidence for a moderated mediation hypothesis is found conditional indirect effects for theoretically meaningful values will be estimated using a generalization of the simple slopes procedure discussed by

Aiken & West (1991) (see Preacher, Rucker, & Hayes, 2007 for the mathematical formulation of this extension). Indirect effects for three levels of faith development will be examined, and include the average, one SD above the mean, and one SD below the mean. These are assessed for statistical significance using both point estimates and a bootstrapping procedure. Preacher and colleagues have also extended the Johnson-Neyman (1936) technique for estimating the region of statistical significance within moderated mediation analysis. Their extension of this technique allows one to estimate points of the moderating variable at which indirect effects remain statistically significant. Given the statistical significance of a_3 this extension will be used in order to estimate specific values of faith development at which the direct effect of religious commitment on autonomy ceases to be statistically significant. This sequence of analysis is repeated twice, first for the presence of meaning in life as a dependent variable and this followed by an examination of life satisfaction as a dependent variable.

CHAPTER IV

RESULTS

The present study aimed to investigate a moderated mediation hypothesis derived from an evaluation of self-determination theory, faith development theory, and a substantive/functional organization of numinous constructs. This study addressed the following research questions:

Research Questions

1. What are the zero-order correlations between religious commitment, faith development, positive psychological outcomes, and religious/spiritual self-mastery?
2. Is the effect of religious commitment on positive psychological outcomes mediated by religious/spiritual self-mastery?
3. Is there a statistically significant interaction between religious commitment and faith development when predicting religious/spiritual self-mastery?
4. Is there a statistically significant interaction between faith development and religious/spiritual self-mastery when predicting positive psychological outcomes?

5. If a significant interaction is found, what are the estimated conditional indirect effects of religious commitment through religious/spiritual self-mastery to positive psychological outcomes at specified values of faith development?
6. At what values of faith development do estimated indirect effects remain statistically significant?

Addressing these research questions will be conducted in several steps. A preliminary examination of descriptive statistics and zero-order correlations will first be inspected. Examination of the moderated mediation hypothesis will initially begin with an investigation of a simple mediation model. Two simple mediation models are examined. The first mediation model specifies that the effect of religious commitment on the presence of meaning in life is mediated by religious/spiritual self-mastery. The second mediation model specifies that the effect of religious commitment on life satisfaction is mediated self-mastery. If a statistically significant indirect effect is apparent then the moderated mediation hypothesis will be examined. This hypothesis predicts that the size of the indirect effect will vary across levels of faith development. To aid the interpretation of study results Table 6 provides two sample items for each study variable.

Descriptive Statistics and Psychometric Properties

Descriptive statistics, along with the standardized alpha coefficients, are presented in Table 7. As indicated by Table 6 many variables were slightly negatively skewed. Kurtosis values were generally acceptable, though self-mastery factor scores were slightly leptokurtic. The absolute value of each kurtosis estimate was less than 3. All estimated alpha coefficients were within acceptable ranges.

Zero-Order Correlations among Study Variables

Zero-order correlations for study variables are presented in Table 7. Most zero-order correlations were small to moderate in size. Several observed correlations are of particular interest to the mediation hypothesis investigated within this study. First, religious commitment was associated with both positive

psychological outcomes. Religious commitment was moderately associated with the presence of meaning in life ($r = .487, p < .01$) and had small observed correlations with life satisfaction ($r = .238, p < .001$).

Table 6

Sample Items for Study Variables

Variable	Sample Items
Presence of Meaning	<ol style="list-style-type: none"> 1. I understand my life’s meaning. 2. My life has a clear sense of purpose.
Life Satisfaction	<ol style="list-style-type: none"> 1. In most ways my life is close to my ideal. 2. The conditions of my life are excellent.
Self-Mastery	<ol style="list-style-type: none"> 1. I feel like I am free to decide what religious/spiritual views to follow. 2. I feel competent in deciding what religious/spiritual views to follow.
Religious Commitment	<ol style="list-style-type: none"> 1. My religious beliefs lie behind my whole approach to life. 2. I spend time in trying to grow in understanding of my faith.
Faith Development	<p>Which statement best describes your view?</p> <ol style="list-style-type: none"> 1. I believe totally the teachings of my church. 2. I find myself disagreeing with my church over numerous aspects of my faith. <p>Which statement best describes your view?</p> <ol style="list-style-type: none"> 1. My personal religious growth has occasionally required me to come into conflict with my family or friends. 2. My personal religious growth has not required me to come into conflict with my family or friends.

Note: All items are rated on a likert-type scale with the exception of faith development. Faith development is a forced choice format wherein individuals pick one of the two statements that best corresponds to their existing view. Items in bold reflect choices reflecting higher scores on the faith development scale.

The simple mediation models decomposes the formerly mentioned correlations into a series of direct and indirect effects. The proposed mediator, self-mastery, was positively correlated with religious commitment ($r = .398, p < .01$). Increases in self-mastery were also associated with increases in the presence of meaning in life ($r = .333, p < .01$) and reported life satisfaction ($r = .164, p < .01$). Faith development (i.e. the proposed moderator) was negatively related to both religious commitment and

Table 7

Descriptive Statistics and Alpha Coefficients for Study Variables

Variable	Possible Range	M	SD	Skewness	Kurtosis	Alpha
Presence of Meaning	5-35	26.36	06.11	-.533	-0.166	.878
Life Satisfaction	5-35	26.45	05.69	-.766	0.472	.839
Self-Mastery	Factor Scores	00.00	01.00	-1.42	2.258	.862
Religious Commitment	10-50	31.88	11.29	-.251	-0.964	.952
Faith Development	0-8	03.98	02.15	.170	-0.862	.708

Note: $N = 651$; Skewness standard error = .096 for all variables; Kurtosis standard error = .191 for all variables.

($r = -.419, p < .01$) and the presence of meaning in life ($r = -.208, p < .01$). The correlation between faith development and life satisfaction failed to be statistically significant ($r = -.074, p > .05$).

Simple Mediation of Religious Commitment and Meaning in Life

This section examines statistical evidence for the hypothesis that the effect of religious commitment on the presence of meaning in life is mediated by self-mastery. A path model specifying the proposed mediation model is found in Figure 3. When regressing the presence of meaning in life on religious commitment, religious commitment accounted for approximately 24% of the variance in the presence of meaning in life $F(1, 649) = 201.49, p < .001$. Increases in religious commitment predicted positive increases in the presence of meaning in life ($a_1 = .263, p < .001$). Religious commitment and self-mastery simultaneously accounted for approximately 26% of the variance in the presence of meaning in life $F(2, 648) = 113.81, p < .001$. When assuming that the indirect effect is normally distributed the mediated effect of religious commitment on the presence of meaning in life was statistically significant

Table 8

Zero-order Correlations among Study Variables

	(1)	(2)	(3)	(4)	(5)
(1) Religious Commitment	-----	.487**	.238**	.398**	-.419**
(2) Presence of Meaning	-----	-----	.502**	.333**	-.208**
(3) Life Satisfaction	-----	-----	-----	.164**	-.074
(4) Self-Mastery	-----	-----	-----	-----	-.047
(5) Faith Development	-----	-----	-----	-----	-----

Note: ** = $p < .01$. All significance tests are two-tailed.

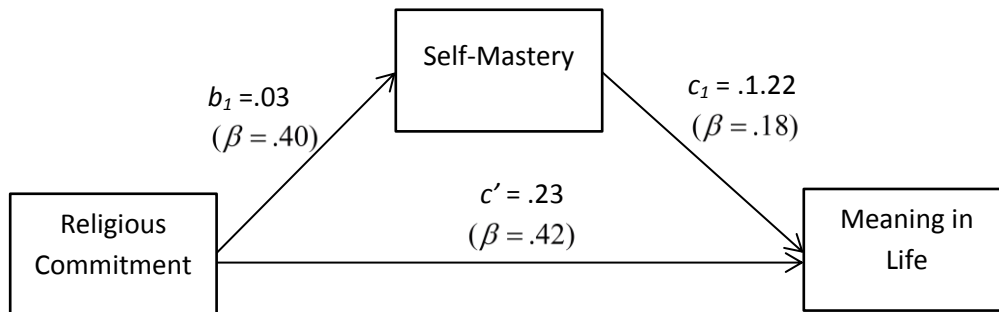
significant ($b_{1c1} = .039$, $z = 4.63$, $p < .001$). Though this evidence suggests that self-mastery mediates the effect of religious commitment on the presence of meaning in life, the estimated indirect effect is not large. The standardized indirect effect, which is an indication of the size of the indirect effect in relation to the standard deviation of meaning in life (see MacKinnon, 2008) is equal to .003. The ratio of the observed indirect effect (i.e. .039) to total effect (i.e. .263) suggests that this mediation model accounts for approximately 15% of the total effect of religious commitment on the presence of meaning in life.

Statistical significance of the indirect effect was examined utilizing a bootstrapping procedure wherein 5,000 samples were randomly selected from the observed covariance matrix. Standard errors were then estimated so that 95% confidence intervals could be constructed around the observed indirect effect. The 95% confidence interval around the indirect effect provided additional support for the mediation hypothesis provided [95% CI = .017, .056].

This analysis supports the hypothesis that self-mastery mediates the effect of religious commitment on the presence of meaning in life. Though the estimated indirect effect is not large, it was statistically significant when analyzed under the assumption of a normal distribution and when utilizing a bootstrapping procedure. Religious commitment however, predicted meaning in life when controlling for self-mastery ($b = .23$, $p < .001$). Given that religious commitment remained a statistically significant

Figure 3

Path Model of Simple Mediation Effect of Religious Commitment to Meaning in Life



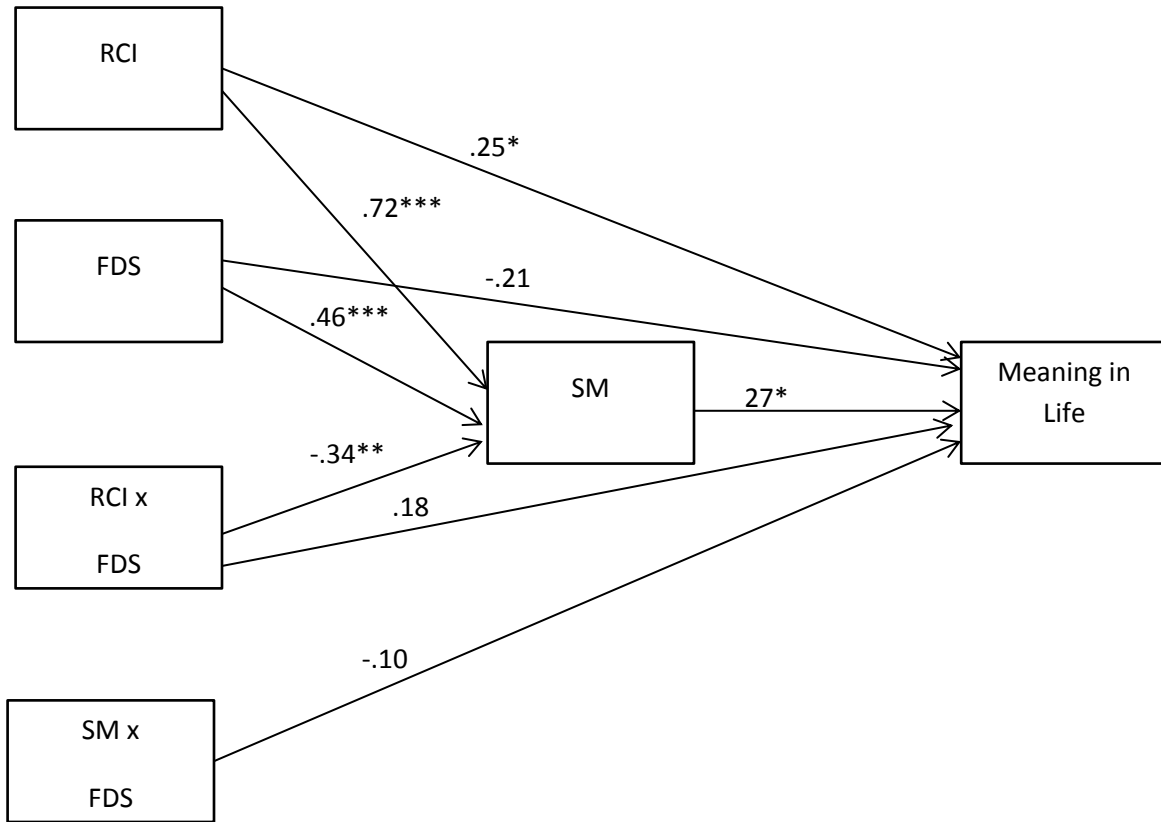
predictor when controlling for self-mastery this evidence supports a partial mediation hypothesis. In other words, religious commitment may have a small effect on the presence of meaning in life, and this effect may still be explained by variables excluded from the specified model. Nevertheless, this evidence allows for an examination of faith development as a potential moderator of the estimated indirect effect.

Faith Development as a Moderator of the Estimated Indirect Effect

Prior model specification predicted that faith development *would* moderate the effect of religious commitment on self-mastery, but faith development *would not* moderate the effect self-mastery on the presence of meaning in life. This hypothesis results from the proposal by self-determination theorists that basic psychological needs are universal. If such needs are universal then the actualization of these needs should have a consistent effect on positive psychological outcomes irrespective of measures of functional religiosity/spirituality. The present analysis supports this hypothesis (see Figure 4). Interestingly however, increases in faith development tend to be associated with decreases in the effect of religious commitment on the presence of meaning in life. Consequently the effect of religious commitment on self-mastery is moderated by faith development ($b = -.02, p < .001$) though no evidence was found for faith development as a moderator of the effect of self-mastery on the presence of meaning in life ($b = -.14, p = .191$). Provided evidence for faith development as a moderator of the simple mediation model,

Figure 4

Faith Development as Moderator of the Mediated Effect of Religious Commitment to Meaning in Life



Note: RCI = religious commitment inventory; SM = self-mastery; FDS = faith development scale; all parameter estimates are standardized; *** = $p < .001$; ** = $p < .01$; * = $p < .05$

the conditional indirect effect was examined across three levels of faith development (i.e. mean, +1 standard deviation above the mean, and -1 standard deviation above the mean).

When assuming that the cross product term is normally distributed the indirect effects for each of these values remains statistically significant. At one standard deviation below the mean of faith development (i.e. 1.83) the indirect effect of religious commitment on the presence of meaning in life is estimated at .08 ($z = 3.91, p < .001$). A bootstrapping procedure was then used to estimate 95% confidence interval around this indirect effect. When drawing 5,000 samples from the observed covariance matrix the 95% confidence interval provided additional support for a mediation effect at 1 standard deviation below the mean of faith development (95% CI = .04, .13). At the mean of faith

development (i.e. 3.99) the estimated indirect effect was estimated at .05 ($z = 4.82, p < .001$). When using the bootstrapping procedure the 95% confidence interval also suggested that this effect was statistically significant (95% CI = .03, .07). At one standard deviation above the mean of faith development (i.e. 6.15) the estimated indirect effect remained statistically significant ($z = 2.89, p < .001$), which was further supported by the bootstrapping procedure (95% CI = .01, .05).

A modification of the Johnson-Neyman (1936) technique was then utilized to examine the region of statistical significance within the moderated mediation hypothesis (see Preacher, Rucker, & Hayes, 2007). This technique, though based upon the assumption that the product term defining the indirect effect is normally distributed, allows one to examine values of faith development at which the indirect effect fails to be statistically significant (see Table 8). As previously indicated increases in faith development were associated with decreases in the estimated mediation effect of self-mastery on the relationship between religious commitment and the presence of meaning in life. Table 8 indicates that the estimated indirect effect fails to be statistically significant when faith development is at 7.2 or above. Put differently, there is insufficient evidence to suggest the presence of an indirect effect of religious commitment on the presence of meaning in life for individuals that score extremely high on faith development, and this effect becomes increasingly larger as scores as faith development decreases.

In conclusion evidence was found to support the moderated mediation hypothesis when utilizing the presence of meaning in life as an indicator of positive psychological outcomes. Statistical criteria supported the proposal that self-mastery would mediate the relationship between religious commitment and the presence of meaning in life. Though the indirect effect was small when analyzed across the entire sample, the estimated size of this effect became increasingly small as faith development scores increased. It is important to recognize that this fluctuation in the estimated indirect effects may be attributed to the moderating role of faith development in the relationship between religious commitment and self-mastery. In other words, increases in faith development were associated with decreases in the predicted effect of religious commitment on self-mastery. This reduction in one path coefficient reduced the size of the

Table 9

Statistical Significance of Indirect Effect across values of Faith Development

Faith Development Score	Indirect Effect	Standard Error	Z-score	p-value
0.00	.104	.035	2.95	.003
0.40	.098	.032	3.08	.002
0.80	.092	.028	3.23	.001
1.20	.086	.025	3.39	<.001
1.60	.089	.021	3.78	<.001
2.00	.074	.019	3.77	<.001
2.40	.071	.017	3.97	<.001
2.80	.064	.015	4.18	<.001
3.20	.059	.013	4.35	<.001
3.60	.054	.012	4.47	<.001
4.00	.049	.011	4.47	<.001
4.40	.045	.010	4.33	<.001
4.80	.041	.010	4.05	<.001
5.20	.037	.010	3.67	<.001
6.00	.029	.010	2.82	.004
6.40	.026	.010	2.42	.016
6.80	.023	.011	2.06	.039
7.20	.020	.011	1.75	.080
7.60	.017	.012	1.48	.139
8.00	.014	.012	1.24	.213

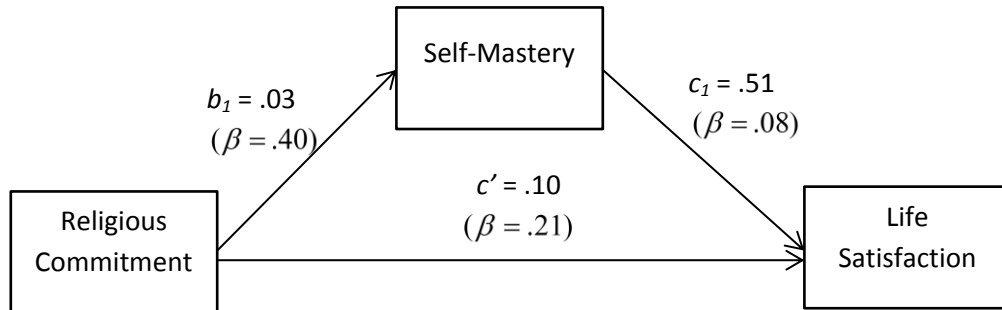
estimated indirect effect. Aligned with prior expectations no evidence was found for faith development as a moderator of the effect of self-mastery on the presence of meaning in life. More specifically, this data suggests that the effect of self-mastery on the presence of meaning in life is consistent across levels of faith development when controlling for religious commitment.

Simple Mediation of Religious Commitment and Life Satisfaction

This section investigates statistical criteria examining the hypothesis that the effect of religious commitment on life satisfaction is mediated by self-mastery. A path model that decomposes the observed correlation between religious commitment and life satisfaction into a series of direct and indirect effects is provided in Figure 5. When regressing life satisfaction on religious commitment, religious commitment accounted for approximately 6% of the variance in life satisfaction $F(1, 649) = 38.959, p < .001$. A unit change of religious commitment predicted a positive increase in life satisfaction ($a_1 = .12, p < .001$).

Figure 5

Path Model of Simple Mediation Effect of Religious Commitment to Life Satisfaction



Note: Standardized parameter estimates are in parentheses; $a_1 = .03$, standard error = .003, $p < .001$; $c_1 = .51$, standard error = .260, $p = .0469$; $c' = .10$, standard error = .021, $p < .001$.

The effect of religious commitment on life satisfaction remained statistically significant when adjusting for self-mastery ($c' = .03$, $p < .001$) and the estimated effect of self-mastery on life satisfaction was statistically significant when controlling for religious commitment ($c' = .10$, $p = .046$). When assuming that the product term defining the indirect effect is normally distributed the indirect effect was estimated at .016 ($z = 1.96$, $p = .049$). The bootstrapping procedure however, failed to corroborate this finding. When drawing 5,000 samples from the observed covariance matrix the confidence interval suggests that the estimated indirect effect may be zero (95% CI = -.001, .033).

In conclusion marginal support was found for the hypothesis that self-mastery mediates the effect of religious commitment on life satisfaction. When examined under the assumption that the indirect effect is normally distributed statistical criteria implied that a partial mediation effect may be present. However, the bootstrapping procedure failed to support this interpretation. This conflicting evidence circumvents the need to investigate a moderated mediation hypothesis.

Summary of Results

Results of the present analysis provide partial support for the moderated mediation hypotheses articulated within the present study. Statistical criteria generally failed to support the hypothesis that self-

mastery would mediate the relationship between religious commitment and life satisfaction. Results do support however, the hypothesis that self-mastery mediates the relationship between religious commitment and the presence of meaning in life. Though statistical criteria generally supported this hypothesis, the magnitude of this effect was not large. However, this evidence remains generally aligned with the proposal that basic psychological need fulfillment, as manifest within the numinous domain, may be an important consideration for vivisecting the association between substantive religiosity and positive psychological outcomes. A simple mediation model was not indicative of the complete picture, given evidence for faith development as a moderator of specific parameters within the specified model. As predicted, the estimated effect of self-mastery on the presence of meaning in life was consistent across levels of faith development when adjusted for religious commitment. The effect of religious commitment on self-mastery however was inconsistent across levels of faith development. Further investigation indicated the strength of the indirect effect of religious commitment through self-mastery increased as faith development decreased.

Stated differently, the predicted effect of religious commitment on self-mastery seems to be minimized as faith development increases. For individuals at lower levels of faith development religious commitment predicts increases in self-mastery, which in turn predicts increases in the presence of meaning in life. For individuals that are extremely high in faith development religious commitment failed to predict increases in self-mastery, and this in turn diminished the size of the estimated indirect effect on the presence of meaning in life. Further examination of the implications of this finding is addressed in the following section.

CHAPTER V

DISCUSSION

We are sailors who are forced to rebuild their ship on the open sea, without ever being able to start fresh from the bottom up. Wherever a beam is taken away, immediately a new one must take its place, and while this is done, the rest of the ship is used as support. In this way, the ship may be completely rebuilt like new with the help of the old beams and driftwood—but only through gradual rebuilding.

--Otto Neurath (1921, p. 75-76)

Numerous studies have documented a positive correlation between religious/spiritual constructs and indicators of positive psychological outcomes (e.g. Allen & Heppner, 2011; Koenig & McCullough, 2001; Myers, 2008). Such findings are not without discrepancies (e.g. Burris, Brechting, Salsman, & Carlson, 2009; Francis, Ziebertz, & Lewis, 2003; Robbins, Francis, & Edwards, 2008); hence investigating the conditions under which observed correlations are manifest remains a central consideration. A failure to recognize that the magnitude of observed correlations is inconsistent across distinct measures of religiosity/spirituality (Worthington, et al., 1996) and across diverse populations (Swinyard, Kau, Phua, 2001) may lead to a false dichotomy. Stated differently, an aim of the present study is to problematize simplistic models that implicitly presume numinous constructs will either “affect” or “fail to have an effect” on positive psychological outcomes. This false dichotomy may be circumvented by recognizing that the

apparent manifestation of causal pathways may vary across time, population, and measurement procedures. Contingency, as opposed to universality, may thus be viewed as a prominent theme of the present study.

Synthesizing this literature remains a challenging task. This challenge is partly exacerbated by the proliferation of philosophical worldviews guiding the conceptualization of both numinous and positive psychological constructs. Questions of construct definition, boundary, and structure may therefore remain incessant “problems” without a clear resolution. Just as demarcating the numinous from the mundane requires a priori assumptions about the constituents of the numinous, so too one cannot distinguish “positive” psychological outcomes without preconceived notions about the desirability of particular psychological attributes. Life satisfaction and the presence of meaning in life are “positive psychological outcomes” provided that one accepts that such attributes *should* be obtained. Labeling these outcomes as positive may be indicative of what is *valued*, as opposed to a universal outcome desirable of human functioning. For example, it is conceivable to argue that these outcomes are actually undesirable or even detrimental in particular circumstances. What do we make of an individual who finds meaning in life by harming others or by watching television? Would this individual also be potentially satisfied given that they were relatively successful in fulfilling their aim? Though generally falling outside the purview of empirical investigation it is important to recognize that empirical research is restricted by these often tacitly held assumptions.

This is all to say that decomposing the observed correlation between numinous constructs and positive psychological outcomes is modeled through a particular vantage point. Paradoxically these vantage points are constraining, yet simultaneously illuminating. For this particular study self-determination theory (Deci, 1996; Deci & Ryan, 2001), coupled with the substantive and functional categorization of numinous constructs (Hill, 2005; Tsang & McCullough, 2003) framed model specification. According to self-determination theorists basic psychological need fulfillment is a path toward fulfilling outcomes associated with eudaimonic living, or living in accordance with one’s true self

(Waterman, 1993). This position provides a framework for hypothesizing that the effect of substantive religiosity/spirituality on positive psychological outcomes is mediated by basic psychological need fulfillment. This study specifically addressed the manifestation of basic psychological need fulfillment that is specific to the numinous domain (Hathcoat & Fuqua, 2012). Consequently, two simple mediation models were examined. First, the effect of religious commitment on the presence of meaning in life was hypothesized to be mediated by religious/spiritual self-mastery. Second, the effect of religious commitment on life satisfaction was hypothesized to be mediated by religious/spiritual self-mastery. Statistical criteria supported the first hypothesis; whereas only marginal support was obtained for the second hypothesis. Though statistical criteria did support the first hypothesis the magnitude of estimated indirect effects were small. Nevertheless, this evidence allowed for an examination of the moderated mediation hypothesis when utilizing the presence of meaning in life as an outcome variable. This analysis indicated that the effect of religious commitment on self-mastery was moderated by faith development; however, there was a failure to find evidence to support faith development as a moderator of the effect of self-mastery on the presence of meaning in life. This evidence was consistent with the proposal provided by self-determination theorists who hypothesize that basic psychological needs are universal (Deci & Vansteenkiste, 2004). Further investigation of the moderation effect indicated that for individuals low in faith development the estimated indirect effect was higher than for individuals who were extremely high in faith development.

The present section will first address observed zero-order correlations among study variables. This is followed by an examination of the simple mediation models investigated within the present study. Particular attention is given to the theoretical implications underlying the hedonistic and eudaimonic conceptions of well-being that are respectively aligned with indicators of life satisfaction and the presence of meaning in life. The moderating effect of faith development is then examined. This examination will primarily focus on the faith development scale and Fowler's (1981, 1996, 2004) articulation of faith

development theory. Limitations and directions for future research are then addressed. Finally, concluding thoughts about the implications of the present study are presented.

Zero-order Correlations among Study Variables

As aligned with previous research small to moderate correlations were observed with religious commitment, the presence of meaning in life, and life satisfaction. Previous research generally suggests that substantive religiosity/spirituality is related to notions of mastery and self-efficacy (Ellison, 1993; Frazier, Mintz, & Mobley, 2005; Holland, 2002). This relationship is complex given that these correlations may be moderated by specific attributes assigned to the divine (Bandura, 2003). The present study however, focused upon religious/spiritual self-mastery, as opposed to a general sense of efficacy or mastery. Religious/spiritual self-mastery is composed of items referring to both a perceived sense of competence in making decisions pertaining religious/spiritual issues and the sense that one's own views are self-determined. As expected, religious commitment was moderately associated with increases in self-mastery. Concordant with the position that basic psychological need fulfillment is associated with positive psychological functioning (Deci & Ryan, 2008a) self-mastery had a positive correlation with the presence of meaning in life and life satisfaction. The observed pattern of correlations of the faith development scale (Leak et al., 1999), an operationalization of Fowler's (1981, 1996) theoretical framework, was not fully aligned with prior expectations.

Previous psychometric investigations of the faith development scale failed to find a positive correlation with intrinsic religiosity (Leak et al., 1999). Leak and colleagues also reported that the scale was positively related to a question asking participants to identify the percentage of their personal beliefs that are derived from personal experience (i.e. reading, living, and prayer). Faith development was negatively correlated with a similar question asking participants to identify the extent to which personal beliefs were derived from external influences, such as family and the church. These two questions appear to be similar to the items defining religious/spiritual self-mastery. Moreover, Fowler's (1981) theoretical

framework describes development as a process wherein previously adopted views become increasingly scrutinized and eventually self-endorsed. It is therefore reasonable to predict that faith development would be positively correlated with religious/spiritual self-mastery. Within the current sample however, the correlation between faith development and self-mastery failed to be statistically significant. Leak and colleagues (1999) also report that this scale was negatively correlated with religious orthodoxy, and it had a positive correlation with accepting changes within the church. Given this pattern it was anticipated that faith development may be negatively correlated with religious commitment. This expectation was supported by the present study.

Faith development, as measured by the scale constructed by Leak and colleagues, may reflect a conflicted approach toward religious/spiritual issues. For example, self-identified Christians in the present sample had an average faith development score of 3.67 ($SD = 1.98$); whereas individuals who identified as either as an atheist, agnostic, or non-affiliated had an average faith development score of 6.78 ($SD = 1.44$). These differences were statistically significant $t(641) = 12.06, p < .001, d = 1.79$. This evidence implies that people within a Judeo-Christian culture, and who subsequently reject or abandon inherited cultural meanings, may systematically score higher on items than those who maintain a religious perspective that is similar to their religious institution or family. The present study also contained a single item indicator stating, "I have had frequent doubts about the truth of my religious or spiritual views". When examined for the entire sample the faith development scale was moderately correlated with reported frequency of doubt ($r = .37, p < .001$). Interestingly, reported frequency of doubt had a stronger correlation with faith development among self-identified Christians ($r = .38, p < .001$), than it did for those who identified as an atheist, agnostic, or non-affiliated ($r = .162, p = .204$). Though this evidence implies that the faith development scale may assess a conflicted, doubting, or questioning approach toward religion it should be recognized that this approach is not necessarily contrary to the theoretical framework articulated by Fowler (1981). Under Fowler's view re-orientation in the

appropriation of meaning is in part accompanied by increased uncertainty, openness, and critical reflection.

Simple Mediation Models

Two simple mediation models were examined. These models both investigated whether the effect of religious commitment on positive psychological outcomes was mediated by self-mastery. They differed however, with respect to the specific positive psychological outcome used as a dependent variable. A simple mediation model was examined using the presence of meaning in life as an outcome variable, and a second model was examined when using life satisfaction as an outcome variable. Statistical criteria (e.g. normal-theory approach and bootstrapping procedure) supported the simple mediation model for the presence of meaning in life, yet it failed to fully support the specified model when using life satisfaction as an outcome variable. These divergent findings have theoretical implications that may be aligned with the hedonic and eudaimonic distinctions made among well-being researchers (e.g. Deci & Ryan, 2001; Ryff, 1989). Under this distinction life satisfaction, which has been conceived as one component of subjective well-being (Diener, 1984), is typically aligned with hedonism (Bradburn, 1969). Subjective well-being researchers take as its starting point the psychological state of the individual when determining well-being. This line of research is therefore more descriptive as opposed to prescriptive in kind. Conversely, the eudaimonic approach is largely prescriptive in that researchers aim to specify conditions that facilitate human functioning (Deci & Ryan, 2001). In other words, “When Aristotle wrote that eudaimonia is gained mainly by leading a virtuous life, he did not mean that virtue leads to feelings of joy...Aristotle was prescribing virtue as the normative standard against which people’s lives can be judged” (Diener, 2009, p. 12). Judgments of life satisfaction may therefore be an unintended consequence of eudaimonic living, but eudaimonic living in no way guarantees life satisfaction.

Self-determination theorists have adopted the latter approach by hypothesizing that basic psychological needs constitute the nutrients necessary for human flourishing (Deci & Ryan, 2008). Eudaimonic living is thus conceived as pursuing the right ends, or in other words ends that are intrinsically valuable (Ryan, Huta, & Deci, 2008). The distinction between intrinsically and extrinsically valued ends is therefore determined by the extent to which specific ends satisfy basic psychological need fulfillment (Ryan et al., 1996). Religious and/or spiritual pursuits fall in between intrinsic and extrinsic aspirations (Ryan, et al., 1993). This neutrality of religious/spiritual pursuits may be expected given that individuals are motivated to pursue these practices for various reasons (Allport & Ross, 1967). Increases in substantive religiosity/spirituality, or what may be viewed as broad inter-individual differences in dispositions toward the numinous (Hill, 2005), does not therefore ensure basic psychological need fulfillment. However, variation in the extent to which substantive religiosity/spirituality does lead to basic psychological need fulfillment should predict outcomes associated with eudaimonic living. If life satisfaction is categorized as a hedonic outcome then it may be reasonable to expect that basic psychological need fulfillment may not lead to increased life satisfaction. If one assumes that this distinction is reasonable, then it may account for the failure to find evidence for a simple mediation effect when using life satisfaction as the outcome variable.

The present study conceptualized the presence of meaning in life as an outcome of eudaimonic living. This choice may be deemed controversial. Other researchers investigating outcomes associated with eudaimonic living focused on measures of subjective vitality (Sheldon, Reiss, & Ryan, 1996) or mindfulness (Ryan, Huta, & Deci, 2008) as outcome indicators. However, Deci and Ryan (2001) have argued that Ryff's (1998) conceptualization of psychological well-being may be better conceived as outcomes associated with basic psychological need fulfillment. Purpose in life constitutes one of Ryff's dimensions of psychological well-being, and purpose in life is conceptually similar to the presence of meaning in life. Ryan and colleagues (2008) have also suggested that "eudaimonic living as represented by a focus on intrinsic goals and a practice of reflection and mindfulness would undoubtedly produce a

sense of meaning” (p. 161). This position is supported by recent evidence suggesting that eudaimonic pursuits tend to be related to a sense of meaning whereas hedonic pursuits are generally related to affective states (Huta & Ryan, 2010; Steger, Kashdan, & Oishi, 2008). Huta and Ryan (2010) also found that complex combinations of hedonic and eudaimonic pursuits may lead to enhanced meaning. This evidence suggests that the presence of meaning may be facilitated by basic psychological need fulfillment, but it does not negate the possibility that hedonic pursuits may also be influential. Nevertheless, this evidence suggests that the presence of meaning in life may be considered a potential outcome of eudaimonic living, as defined by self-determination theorists.

Just as eudaimonic living may not necessitate the presence of meaning so too the presence of meaning may be an unintended consequence of hedonic aims. As previously indicated, it also remains conceivable for an individual to derive a sense of meaning via means that many would consider destructive (e.g. Would Adolf Hitler score high on the presence of meaning in life scale?). Nevertheless, this line of evidence does suggest that basic psychological need fulfillment may be a pathway toward the presence of meaning in life. This issue becomes more complicated however, by recent evidence suggesting that the presence of meaning in life mediated the relationship between religiosity and life satisfaction (Steger & Frazier, 2005). If the presence of meaning in life is conceived as a eudaimonic outcome and life satisfaction is viewed as predominantly a hedonic outcome then this evidence may suggest an alternative model. If aligned with the proponents of self-determination theory, this alternative model would specify that basic psychological need fulfillment increases the presence of meaning in life, and this in turn enhances life satisfaction. Some have argued that religion has the predominant function of providing a source of meaning (e.g. Silberman, 2005) and this position is generally aligned with the present study. However, this study further argues that the extent to which this function is realized may in part be attributed to variation in basic psychological need fulfillment. Still, greater theoretical work is needed in this line of research that explicitly addresses relations between eudaimonic and hedonic aspirations, processes, and outcomes.

Moderated Mediation Hypothesis

Research within the psychology of religion has generally lacked theoretical guidance and for years this line of research has been within a measurement paradigm (Gorsuch, 1988). Hill and Hood (1999) published a compendium of over 100 measures of religiosity/spirituality, and since this publication other researchers have continued to add additional measures. Researchers have proposed various definitions of numinous constructs (e.g. Pargament & Zinnbauer, 2005; Piedmont, 1999; Tisdell, 2003) and each conceptualization has particular consequences. The present paper has argued that definitions of numinous constructs are beyond empirical falsification and are better conceived as proposals to use the term within a specific context. Given this position definitions and/or conceptualizations of the numinous are evaluated by both their utility for achieving valued aims and their consequences. The proposal set forth by Tsang and McCullough (2003) provides one rationale for categorizing numinous constructs, and this rationale is aligned with the multi-level interdisciplinary paradigm proposed by Emmons and Paloutzian (2003). According to this position numinous constructs may be categorized according to their substantive and functional features (Hill, 2005). Substantive religiosity/spirituality is conceived as a broad inter-individual difference variable whereas functional religiosity/spirituality reflects differences in the experiential reality of the numinous. Individuals may therefore be equally disposed toward the numinous (e.g. committed), yet vary in the frequency of spiritual experiences, religious motivation, and appropriation of numinous meaning. This view provides a useful framework for problematizing the false dichotomy implicitly assumed in other research regarding the relationship between numinous constructs and positive psychological outcomes.

Most research has examined the relationship between measures of substantive religiosity/spirituality and positive psychological outcomes. Efforts to explain observed associations have tended to utilize hierarchical regression procedures, partial correlations, or simple mediation models (see Miller & Thoresen, 2003; Sloan, Bagiella, & Powell, 2001). Consideration of the functional aspects of the numinous however, provides a vantage point to examine conditions wherein observed effects are

manifest. The present study utilized faith development (Fowler, 1981) as a moderating variable of simple mediation effects. Specifically, this study argued that the indirect effect from religious commitment through religious/spiritual self-mastery to positive psychological outcomes would be moderated by levels of faith development. The size of the observed indirect effect was therefore hypothesized to vary across levels of faith development. Evidence from the present study supported this hypothesis, particularly when utilizing the presence of meaning in life as a criterion variable. The predicted effect of religious commitment on self-mastery appears to be minimized as faith development increases. For individuals at lower levels of faith development religious commitment predicts increases in self-mastery, which in turn enhances meaning in life. For individuals that are extremely high in faith development religious commitment does not predict self-mastery, and this in turn diminishes the size of the estimated indirect effect on the presence of meaning in life.

Two points of interest are worth noting. First, it was predicted that faith development would not moderate the effect of self-mastery on the presence of meaning in life. Evidence supported this prediction and is therefore consistent with the proposal of self-determination theorists who argue that basic psychological needs are universal (Deci & Vansteenkiste, 2004). If needs are universal then it was anticipated that the actualization of these needs should have a relatively consistent effect on positive psychological outcomes. Secondly, it was predicted that faith development would moderate the effect of religious commitment on self-mastery. Changes in the size of the indirect effect were found across levels of faith development and these changes may be attributed to faith development moderating the predicted effect of religious commitment on self-mastery. Given that faith development theory, as articulated by Fowler (1981), construes development as a process characterized by enhanced critical reflection and sense of autonomous ownership of adopted views this led to specific expectations about the moderating effect. It was predicted that the size of the indirect effect would increase as faith development increases. However, evidence from the present study suggested an inverse pattern wherein the size of the indirect effect actually decreased as faith development increased.

Numerous possibilities exist for interpreting the moderating effect of faith development. First, it is possible that this moderating effect is in part attributable to the specific measure of substantive religiosity/spirituality (i.e. religious commitment). According to Fowler (1991) “faith is a dynamic pattern of personal trust in and loyalty to a center or centers of value” (p. 32), or in other words it reflects patterns in what individuals set their hearts upon as they negotiate meaning. It is conceivable that progression in faith development coincides with a transformation of religious commitment. Fowler goes on to say “this critical and reflective examination of our faith heritages does not mean that one must give up being [committed to a particular tradition]. But it does mean that now one maintains that commitment...by choice and explicit assent” (p. 39). This shift from tacit toward explicit consent would seem to predict that increases in faith development would enhance the effect of religious commitment on self-mastery. However, it must be remembered that the indirect effect only failed to be statistically significant at extreme high levels of the faith development scale (e.g. > 7.2 on a 0-8 point scale). At this level of faith, commitment may be increasingly tentative as individuals embrace “a principled interest in and openness to truths of other cultural and religious traditions” (Fowler & Dell, 2006, p. 41). Consequently for individuals of high levels of faith development, abandoning previously held commitments may lead to self-mastery.

This however, presumes that the faith development scale (Leak et al., 1999) actually captures these aspects of development. Critical examination of item content suggests that higher scores of faith development reflect an abandonment of institutional and familial commitments. For example, high scores tend to reflect disagreement with the religious institutions, orientations that are self-driven as opposed to family driven, previous conflict with family, and the position that inherited religious meaning systems have become less relevant to their current views. As previously indicated, this is supported by an observed negative correlation with religious commitment ($r = -.419, p < .001$) and a positive correlation with the frequency of doubt ($r = .37, p < .001$). Consequently increases in faith development scores in part reflect disassociation from prior religious/spiritual influences. Given this interpretation it is possible

that for those high in faith development, increases in self-mastery are obtained by a movement away from organized religion and familial commitments. For those in low to moderate ranges however, religious commitment remains predictive of self-mastery and thus leads to the presence of meaning in life.

These explanations are largely post-hoc attempts to explain unexpected findings, and may also be a function of sample characteristics (i.e. undergraduate students attending a secular institution in a relatively conservative region of the United States). Astin, Astin, and Lindholm (2011) provide evidence that suggests particular college experiences (e.g. study abroad) may actually be conducive to spiritual development. Others have speculated about the apparent decline in religious behavior among college students (e.g. Hastings & Hoge, 1976; Stoppa & Lefkowitz, 2010). Variation in collegiate experiences may therefore have numerous implications on both substantive and functional religiosity/spirituality (Lee, 2002). A critical aspect of this experience may be the saliency of religion/spirituality in academics (Bryant, 2011), thus it cannot be assumed that hypothesized effects will necessarily remain consistent across institutions with diverse populations and campus climates. Additionally, the faith development scale represents one of many measures aligned with faith development theory (see Parker, 2006) and disparate findings may emerge if different measures were employed. Others (e.g. Streib, 2001, 2005) have expanded upon Fowler's theory and these elaborations may specify different predictions about the extent to which measures of substantive religiosity/spirituality predict psychological need fulfillment. Nevertheless, findings from the present study imply that the substantive/functional categorization of numinous constructs is a useful framework for further investigating moderated mediation hypotheses.

Limitations

Numerous limitations exist within the present study. These limitations not only temper conclusions, but serve as reference points for subsequent lines of inquiry. Stated limitations pertain to sampling, research design, and the numerous assumptions entailed by a mediation analysis. Each of these limitations will be addressed while underscoring how these restrictions provide avenues for advancing

this line of inquiry. Though this section underscores how study limitations may provide directions for subsequent research, a detailed discussion pertaining to subsequent research is addressed in the following section.

Mediation analysis is often conducted utilizing ordinary least squares regression. Accordingly assumptions of ordinary least squares regression are also applicable within mediation analysis. However, a simple mediation model may also entail additional assumptions that are in need of brief examination (e.g. see MacKinnon, 2008).

1. *Temporal precedence* with respect to the specified model is assumed. In other words, it is assumed that religious commitment precedes self-mastery in time, which in turn precedes positive psychological outcomes in time. The design of this study does not permit an empirical examination of this assumption. Other causal models hence remain logical possibilities (e.g. positive psychological functioning may lead to increases in religious commitment that in turn enhance self-mastery). Theory, as opposed logical possibility, should be a guide to model specification.
2. *Normally distributed product coefficients* when constructing standard errors around the indirect effect is assumed. The bootstrapping re-sampling procedure does not make this assumption however. Estimated indirect effects will be examined when making the assumption that product coefficients are normally distributed. Findings from the present study were both examined under the assumption of a normally distributed product coefficients for the indirect effect as well as an implementation of a bootstrapping procedures wherein 5,000 samples were randomly selected from the observed covariance matrix.
3. *Omitted influences* for model specification are assumed to be non-existent. Stated differently, the specified model is assumed to be the ‘correct’ model. Unspecified variables are assumed to have no effect on parameter estimates. An aim of this study is to articulate a rationale for suggesting

that simple mediation models may be overly simplistic. A failure to consider that mediation effects may be moderated by third variables can lead to erroneous conclusions. Though the present study investigates a simple mediation model it is likely that unobserved variables are also important considerations in model specification. The present study aimed to provide tentative evidence that problematizes simplistic mediation effects. The ‘reality’ of these effects is likely more complicated than the present analysis permits.

4. *Causal inference* for the mediated effect is also assumed. The design of the present study does not permit an examination of this assumption. It is conceivable that the measure of basic psychological needs employed within this study reflects a proxy indicator of other causal mechanisms. This study has also presumed that causation is unidirectional. Non-recursive models may also be possible (e.g. meaning in life may affect religious commitment).

Additionally, causation is itself a controversial topic that has been debated by both philosophers and social scientists. The present study frames the results in terms of an ‘effect’ though statistical mediation should not be taken as evidence that such effects are necessitated. A program of research is needed in order to make arguments for causality and even with a developed line of research the ontological status of causality remains controversial.

All of the assumptions formerly discussed are critical. However, three of these are in need of further attention. The present study examines correlations measured at a single point in time. As a consequence of this design inferences pertaining to both temporal precedence and causal inferences are restricted.

When discussing the results causal language was adopted to be consistent with mediation analysis.

However, no causal claims are being made within the present study. Subsequent research is therefore needed in order to examine temporal precedence and causal inferences. Finally, the mediation models examined within the present study may be overly simplistic. For example, it is possible that the results may change if one considers the joint influence of basic psychological needs or the possibility of bidirectional effects.

The study was restricted to volunteers who were conveniently selected at a large land-grant institution in the Midwest. Volunteers are likely different from non-volunteers, and it remains questionable whether these findings would generalize to other populations. Given the claims of universality among self-determination theorists (Deci & Vansteenkiste, 2004) however, similar mediation models are predicted to be consistent across a range of populations. Stated differently, basic psychological need fulfillment is predicted to constitute a path from substantive religiosity/spirituality to positive psychological outcomes. The present study however, suggests that equivalent dispositions toward the numinous fails to necessitate psychological need fulfillment. Individuals that are equivalent at a broad-band disposition toward the numinous vary in the experience and/or expression of their religious reality. These functional aspects of religiosity/spirituality may therefore moderate the extent to which dispositional religiosity/spirituality leads to psychological need fulfillment. As predicted, and subsequently supported in this study, basic psychological needs should have a relatively consistent effect on positive psychological outcomes. Research should continue to investigate these hypotheses across diverse populations. Continued psychometric investigations are needed however, before this becomes feasible. Extensive psychometric investigations have occurred with most of the scales used in this study (Diener et al., 1985; Leak et al., 1999; Steger et al., 2006; Worthington et al., 2003), though to date the measure of basic psychological need fulfillment has only been examined among undergraduate samples (Hathcoat & Fuqua, 2012). Psychometric investigations are therefore needed, particularly among individuals outside a Judeo-Christian culture.

Finally, it should be noted that this study is in part limited by investigating hypothesized models on the entire sample. What characterizes a population? Should undergraduate students define a population or might this be overly broad? For example, previous research has suggested that gender differences exist with respect to numinous constructs. Particularly, at least in the United States, women tend to report higher levels of religiosity than men (Gallup & Lindsay, 1999) and similar differences have been reported among college students (Bryant, 2007b). Such differences may also have distinct

implications on the relationship between numinous constructs and positive psychological outcomes (Francis & Robbins, 2000) and gender effects may be further moderated by denominational influences (Maselko & Kubzansky, 2006). Within the present study females had on average higher levels of religious commitment ($M = 33.06$, $SD = 11.18$) than males ($M = 30.55$, $SD = 11.29$) $t(649) = 2.841$, $p = .005$, $d = .22$. There was a failure to find statistically significant differences between males and females on other study variables. It is possible that study findings may be further moderated by gender and/or religious affiliation. Clearly these possibilities are in need of subsequent research. However, this consideration only further underscores a principle argument employed within the present—greater consideration should be given to conditions under which proposed third variable effects may vary.

Directions for Future Research

This chapter has alluded to several possibilities for advancing this line of research, though these possibilities have largely been inferred from stated limitations. Questions of causality, temporal precedence, and model specification remain paramount concerns that are in need of further examination. Study limitations however, are not the sole impetus for advancing this line of inquiry. Subsequent research may also stem from the theoretical rationale guiding the current study, as well as specific findings that stand in need of further clarification. This section does not preclude discussing directions for subsequent research that originate from study limitations. However, this section principally entails suggestions for future research that may be inferred from proposals aligned with self-determination theorists (e.g. Ryan, 1995) and the categorical classification of numinous constructs derived from the multi-level paradigm (Hill, 2005; Paloutzian & Emmons, 2003). This section also contains suggestions for future research that expands upon study findings. This section concludes with a consideration of the practical implications of the present study.

This study has utilized proposals of self-determination theorists in order to provide a rationale for specifying mediating mechanisms between observed relations between numinous constructs and positive

psychological outcomes (Deci & Ryan, 2001). Three basic psychological needs are addressed by these theorists, which include the need for autonomy, relatedness, and competence. Efforts to measure the manifestation of these needs within the numinous domain however, found a two-factor structure defined as religious/spiritual relatedness (i.e. defined by items indicating interpersonal and divine connections) and religious/spiritual self-mastery (i.e. defined by items indicating a sense of personal competence in answering religious/spiritual questions and a sense that one's own views are self-determined) (Hathcoat & Fuqua, 2012). This factor structure was also supported in the present study, though only self-mastery was specified as a mediating variable. Self-mastery and relatedness were inter-correlated ($r = .486, p < .001$) thus part of the estimated indirect effect associated with self-mastery may be due to an unanalyzed association with the relatedness factor. It is imperative that subsequent research examine joint mediation models including both the self-mastery and relatedness factors. Though this study is aligned with self-determination theory it should be recognized that this theoretical perspective is but one lens through which to decompose observed correlations with religiosity/spirituality and positive psychological outcomes.

Developing virtue and character strengths is an alternative account of human flourishing (Seligman & Csikszentmihalyi, 2000) that may also be relevant to understanding the association between numinous constructs and positive psychological outcomes. Seligman (2002) has defined spirituality as a virtue that “can be subdivided for the purpose of classification and measurement” (p. 11) into distinct character strengths. Under this view it is exercising character strengths that lead to happiness and well-being. This alternative account has been examined by Schuurmans-Stekhoven (2011) who found that the relationship between spiritual beliefs (e.g. “I believe each person has a soul”) and indicators of psychological well-being either became statistically insignificant or in the negative direction when controlling for other character strengths (e.g. fortitude). Though there are limitations within this study, this theoretical account may serve as a rival framework to self-determination theory. Subsequent research may construct studies that examine rival hypotheses derived from the ideas of Seligman (2002) and self-

determination theorists (Ryan, 1995). If temporal precedence is assumed then one may ask whether spirituality leads to positive psychological outcomes through the development of character strengths or through basic psychological need fulfillment. Conversely, it is conceivable that each of these accounts is compatible and may in some way jointly contribute to our understanding of these relationships. Though each of these approaches may be criticized both conceptually and philosophically (see Ryan & Deci, 2006; Slife & Richardson, 2008), advancing this line of research may proceed by identifying rival hypotheses stemming from each of these frameworks.

An examination of alternative theoretical accounts is but one step in further investigating the conditions under which specified models may vary. This study utilized faith development theory as a moderating variable of simple mediation effects. However, the substantive and functional categorization of numinous constructs (Hill, 2005) that is aligned with the multi-level paradigm provides an account that may further identify other functional measures of the numinous as moderators of observed relationships. Numerous variables may serve this purpose, though only two of these will be briefly addressed. First, Emmons (2003) has articulated the importance of goals or individual strivings in the facilitation of meaning. He suggests that a taxonomy of meaning may be characterized by strivings related to work, intimacy, spirituality, and transcendence. Variation in personal strivings may provide a functional aspect (i.e. spiritual strivings) through which to understand how individuals of equivalent substantive religiosity may vary in reported psychological need fulfillment. In other words, individuals may espouse equal commitment to a religious institution but vary in their day to day strivings to obtain goals related to the numinous. This variation may be important for vivisectioning differences in religious/spiritual basic psychological need fulfillment (i.e. relatedness and self-mastery) that in turn enhances the presence of meaning in life. Similarly, daily spiritual experiences (Underwood & Teresi, 2002) may function in a similar way in that individuals with equal religious commitment may vary in their reported daily spiritual experiences. Differences in reported daily spiritual experiences may moderate the predicted effect of religious commitment on religious/spiritual relatedness and/or self-mastery thus changing the size of

estimated indirect effects in a simple mediation model. Utilizing the substantive/functional distinctions discussed in this study therefore allows for subsequent identification of potential moderation effects. Subsequent research should thus continue to examine functional/operational aspects of the numinous that may contribute to observed variation in specified models.

Setting these theoretical concerns aside, specific findings within the present study are also in need of further examination. For example, the failure to find a statistically significant correlation between the faith development scale (Leak et al., 1999) and self-mastery was unexpected. Differential item functioning across distinct populations stands in need of further investigation. Additionally, it has already been indicated that within this sample, atheists, agnostics, and non-affiliated individuals had a tendency to score higher on the faith development scale than self-identified Christians. Mean differences in self-mastery among self-identified Christians ($M = .06, SD = .87$) and atheists, agnostics, and non-affiliated individuals ($M = -.001, SD = .89$) failed to be statistically significant $t(566) = .598, p = .55, d = .06$. However, when splitting this file into distinct groups, the correlation between self-mastery and faith development for atheists, agnostics, and non-affiliated individuals was $.314 (p = .012)$, whereas this correlation was extremely small, but in the negative direction for self-identified Christians ($r = -.085, p = .041$). As previously indicated this evidence suggests that treating college undergraduates as a homogenous subgroup may be overly simplistic. Subsequent research should therefore consider the possibility that moderated mediation effects may vary across religious affiliations (or lack thereof) in undergraduate samples. Before undertaking this pursuit however, there is a need to examine factorial invariance of these scales across religious affiliations.

Finally, some researchers may be interested in the practical implications of the present study. It is conceivable that basic psychological need fulfillment constitutes a path for parents, teachers, administrators, ministers, and/or counselors to enhance positive psychological outcomes through the numinous. However, the present study is not sufficient evidence to warrant this application. Even if we assume that the findings did warrant practical application such efforts may be criticized on both

philosophical and theological grounds. As previously stated, labeling the presence of meaning in life and life satisfaction as “positive” implies that these attributes are desirable outcomes of human functioning. Perhaps there are advantages to experiencing an absence of meaning or there may be individuals who arguably *should not* be satisfied with their life. Even if we grant that these outcomes are desirable many ethical questions remain unanswered about efforts to alter substantive and/or functional religiosity/spirituality. The present study for example, found that the indirect effect from religious commitment to the presence of meaning in life via self-mastery was larger among those with relatively lower faith development scores. What implications might this have on those who are “high” in faith development? Should a minister/counselor attempt to alter an individual’s faith development simply to elevate the magnitude of this indirect effect? Is this ethical? The present study raises these possibilities, but in no way does this line of research imply that these models should be applied. Continual philosophical and theological scrutiny is needed to establish ethical parameters on proposed applications of these models.

Concluding Comments

The correlation between numinous constructs and health related outcomes remains a topic of interest among both laity and academics (Burkhardt, 2011; Dye, 2010; Nichols & Hunt, 2011; Plante & Sharma, 2001; Warner, 2007; Worthington, et al., 1996). Though many researchers agree that a correlation exists among these constructs (e.g. Plante & Sharma, 2001) some skepticism remains in order (Thoresen, Oman, & Harris, 2001) given a general failure to examine the conditions under which observed correlations are moderated, mediated, or confounded by additional variables (Diener, 2009). Research that has addressed these issues typically investigates partial correlations, simple mediation models, or a variant of hierarchical regression procedures (Miller & Thoresen, 2003). Since criteria for evaluating confounding and mediating variables are statistically equivalent (MacKinnon, Krull, & Lockwood, 2000), a lack of theory continues to facilitate ambiguity in the identification of third variable effects. These challenges are intensified by difficulties associated with demarcating the numinous from

the mundane (Koenig, 2008) and a tendency to disregard articulations of the numinous that extend beyond substantive inter-individual dispositions. A two-fold approach is thus necessary to address these issues. First, researchers should continuously strive for clarity in the empirical explication of numinous constructs. Secondly, when vivisectioning the observed correlation between numinous constructs and positive psychological outcomes the specification of third-variable effects should be theory driven. This study aimed to address these issues by relying upon theory, as opposed to “common-sense,” for model specification.

This line of thought leads to a central consideration regarding an aim of the present study. The present study should not be interpreted as an advocate for the “truth” of specified models. Self-determination theory allows for specific predictions, yet the value of this theory for elucidating the correlation between numinous constructs and positive psychological outcomes is in need of further examination. This paper has adopted the multilevel paradigm (Emmons & Paloutzian, 2003) as a lens through which to categorize numinous constructs (Hill, 2005). Concurrently, it has been argued that definitions of the numinous are better conceived as “proposals to use the term within specific contexts” (Molendijk, 1999, p. 9). The essentialist goal of isolating necessary and sufficient categories of the numinous is beyond empirical examination. Provided that “value considerations impinge upon measurement in a variety of ways” (Messick, 1975, p. 960) it is necessary to scrutinize the consequences of these values in our measurement practices. Each conceptualization of the numinous presupposes theological and/or philosophical positions (Peet, 2005; Speck, 2005) though some of these may be more or less useful for achieving particular aims. Just as validation is an act of accumulating empirical and theoretical support for inferential interpretations given to a set of scores (AERA, APA, & NCME, 1999), so too characterizations of numinous constructs act as interpretations that may be evaluated by their social consequences, theological/philosophical ramifications, and their ability to cover the breadth of empirical observations. In light of these constraints, the multi-level paradigm (Emmons & Paloutzian, 2003),

coupled with deductions from proposals set forth by self-determination theorists (Ryan, 1995), seems to provide a useful starting point to frame subsequent investigations.

The present study aimed to provide a challenge to researchers who are attempting to understand the often observed association between numinous constructs and positive psychological outcomes. Assuming that the numinous must either facilitate or fail to facilitate positive psychological outcomes presumes a false-dichotomy. This presupposition is challenged in two respects. First, this study articulates a framework for investigating conditions under which the decomposition of observed correlations into direct and indirect effect varies across dimensions of the numinous. Researchers should consider the possibility that proposed mechanisms and confounding influences are subject to change across distinct measures, populations, and periods of time. Equivalence at a broad-band inter-individual difference level (i.e. the substantive level) does not ensure functional equivalence in the expression and/or experience of a religious/spiritual reality (i.e. the functional level). Isolating functional variation across substantive indicators provides a general outline for specifying contingencies in identified pathways from the numinous to positive psychological outcomes. Utilizing this approach hence calls for greater theoretical precision as efforts to understand variation in third variable effects increase. This leads to the second challenge. Not only was this framework articulated, but statistical criteria supported the proposed moderated mediation hypothesis. Obviously the limitations of this study provide numerous constraints on the meaning of these results. However, this evidence does imply that greater attention should be given to self-determination theory as a viable framework for exploring the apparent connection between numinous constructs and positive psychological outcomes. This evidence also suggests the need for a greater skepticism toward sweeping generalizations claiming to have sufficiently accounted for the observed association between numinous constructs and positive psychological outcomes.

REFERENCES

- Abdel-Khalek, A. M. (2006). Happiness, health, and religiosity: Significant relations. *Mental Health, Religion & Culture, 9*, 85-97. doi: 10.1080/13694670500040625
- Abdel-Khalek, A. M. (2011). Subjective well-being and religiosity in Egyptian college students. *Psychological Reports, 108*, 54-58. doi: 10.2466/07.17.pr0.108.1.54-58
- Abdel-Khalek, A. M., & Lester, D. (2009). A significant association between religiosity and happiness in a sample of Kuwaiti students. *Psychological Reports, 105*, 381-382.
- Adam, R. J. (2008). Relating faith development and religious styles: Reflections in light of apostasy from religious fundamentalism. *Archive for the Psychology of Religions, 30*, 201-231. doi: 10.1163/157361208x317204
- Ai, A. L., Peterson, C., Rodgers, W. L., & Tice, T. N. (2005). Faith factors and internal health locus of control in patients prior to open-heart surgery. *Journal of Health Psychology, 10*, 669-676. doi: 10.1177/1359105305055318
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA US: Sage Publications, Inc.
- Allen, G. E. K., & Heppner, P. P. (2011). Religiosity, coping, and psychological well-being among Latter-Day Saint Polynesians in the U.S. *Asian American Journal of Psychology, 2*, 13-24. doi: 10.1037/a0023266

- Allport, G. W. (1950). *The individual and his religion: A psychological interpretation*. Oxford England: Macmillan.
- Altemeyer, B. (2004). The decline of organized religion in western civilization. *International Journal for the Psychology of Religion*, 14, 77-89. doi: 10.1207/s15327582ijpr1402_1
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for Educational and Psychological Testing*. Washington DC: American Psychological Association.
- Amico, R. P. (1993). *Problem of the criterion*. Lanham, MD: Rowman and Littlefield Publishers.
- Argyle, M. (1999). Causes and correlates of happiness. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology*. (pp. 353-373). New York, NY: Russell Sage Foundation.
- Assor, A., Cohen-Malayev, M., Kaplan, A., & Friedman, D. (2005). Choosing to stay religious in a modern world: Socialization and exploration processes leading to an integrated internalization of religion among Israeli Jewish youth. *Motivation and Religion: Advances in Motivation and Achievement*, 14, 105-150.
- Astin, A. W., Astin, H. S., & Lindholm, J. A. (2011). Assessing students' spiritual and religious qualities. *Journal of College Student Development*, 52(1), 39-61. doi: 10.1353/csd.2011.0009
- Astley, J. (2000). Insights from faith development theory and research. Retrieved October 1, 2011, from <http://www.passingonthefaith.org.uk/docs/Insights%20from%20Faith%20Development%20Theory%20and%20Research.pdf>

- Baldacchino, D., & Draper, P. (2001). Spiritual coping strategies: a review of the nursing research literature. *Journal of Advanced Nursing*, *34*, 833-841. doi: 10.1046/j.1365-2648.2001.01814.x
- Bandura, A. (2003). On the psychosocial impact and mechanisms of spiritual modeling: Comment. *International Journal for the Psychology of Religion*, *13*, 167-173. doi: 10.1207/s15327582ijpr1303_02
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182. doi: 10.1037/0022-3514.51.6.1173
- Batson, C. D., Schoenrade, P., & Ventis, W. L. (1993). *Religion and the individual: A social-psychological perspective*. New York, NY: Oxford University Press.
- Berger, P. L. (1974). Some second thoughts on substantive versus functional definitions of religion. *Journal for the Scientific Study of Religion*, *13*, 125-133. doi: 10.2307/1384374
- Bergin, A. E. (1983). Religiosity and mental health: A critical reevaluation and meta-analysis. *Professional Psychology: Research and Practice*, *14*, 170-184. doi: 10.1037/0735-7028.14.2.170
- Bjarnason, D. (2007). Concept analysis of religiosity. *Home Health Care Management Practice*, *19*, 350-355. doi: 10.1177/1084822307300883
- Blaine, B., & Crocker, J. (1995). Religiousness, race, and psychological well-being: Exploring social psychological mediators. *Personality and Social Psychology Bulletin*, *21*, 1031-1041. doi: 10.1177/01461672952110004

- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York, NY: Basic Books.
- Bradburn, N. M. (1969). *The structure of psychological well-being*. Oxford England: Aldine.
- Brown, P. H., & Tierney, B. (2009). Religion and subjective well-being among the elderly in China. *The Journal of Socio-Economics*, 38, 310-319. doi: 10.1016/j.socec.2008.07.014
- Bryant, A. N. (2007a). The effects of involvement in campus religious communities on college student adjustment and development. *Journal of College and Character*, 8, 1-25.
- Bryant, A.N. (2007b). Gender differences in spiritual development during the college years. *Sex Roles*, 56, 835-846.
- Bryant, A.N. (2011). The impact of campus context, college encounters, and religious/spiritual struggle on ecumenical worldview development. *Research in Higher Education*, 52, 441-459. doi: 10.1007/s11162-010-9205-0
- Burris, J. L., Brechting, E. H., Salsman, J., & Carlson, C. R. (2009). Factors associated with the psychological well-being and distress of university students. *Journal of American College Health*, 57, 536-543. doi: 10.3200/jach.57.5.536-544
- Byron, K., & Miller-Perrin, C. (2009). The value of life purpose: Purpose as a mediator of faith and well-being. *The Journal of Positive Psychology*, 4, 64-70. doi: 10.1080/17439760802357867
- Caprara, G. V., Steca, P., Gerbino, M., Paciello, M., & Vecchio, G. M. (2006). Looking for adolescents' well-being: Self-efficacy beliefs as determinants of positive thinking and happiness. *Epidemiologia e Psichiatria Sociale*, 15, 30-43.

- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and Validity Assessment* (Vol. 17). Thousand Oaks California: Sage Publications.
- Cronbach, L. J. (1989). Construct validation after thirty years. In R. L. Linn (Ed.), *Intelligence: Measurement, theory, and public policy: Proceedings of a symposium in honor of Lloyd G. Humphreys*. (pp. 147-171). Champaign, IL US: University of Illinois Press.
- Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies, 9*, 1-11. doi: 10.1007/s10902-006-9018-1
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology, 49*, 182-185. doi: 10.1037/a0012801
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin, 27*, 930-942. doi: 10.1177/0146167201278002
- Deci, E. L., & Vansteenkiste, M. (2004). Self-determination theory and basic need satisfaction: Understanding human development in positive psychology. *Ricerche di Psicologia, 27*, 23-40.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542-575. doi: 10.1037/0033-2909.95.3.542
- Diener, E. (2008). Myths in the science of happiness, and directions for future research. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being*. (pp. 493-514). New York, NY US: Guilford Press.

- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-75. doi: 10.1207/s15327752jpa4901_13
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist, 61*, 305-314. doi: 10.1037/0003-066x.61.4.305
- Diener, E., & Ryan, K. (2009). Subjective well-being: A general overview. *South African Journal of Psychology, 39*, 391-406.
- Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science, 13*, 81-84. doi: 10.1111/1467-9280.00415
- Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest, 5*, 1-31. doi: 10.1111/j.0963-7214.2004.00501001.x
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*, 276-302. doi: 10.1037/0033-2909.125.2.276
- Duriez, B., Soenens, B., Neyrinck, B., & Vansteenkiste, M. (2009). Is religiosity related to better parenting? Disentangling religiosity from religious cognitive style. *Journal of Family Issues, 30*, 1287-1307. doi: 10.1177/0192513x09334168
- Durkheim, E. (1916). *The elementary forms of the religious life*. Oxford England: Macmillan.
- Dye, L. (2010). Religion and health: Is there a link? Retrieved August 22, 2011 from <http://abcnews.go.com/Technology/DyeHard/religion-health-link/story?id=11748798>.
- Dykstra, C., & Parks, S. (1986). *Faith development and Fowler*. Birmingham, AL US: Religious Education Press.

- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*, 1-22. doi: 10.1037/1082-989x.12.1.1
- Ellison, C. G. (1991). Religious involvement and subjective well-being. *Journal of Health and Social Behavior, 32*, 80-99. doi: 10.2307/2136801
- Ellison, C. G. (1993). Religious involvement and self perception among Black Americans. *Social Forces, 71*, 1027-1055. doi: 10.2307/2580129
- Ellison, C. G., Boardman, J. D., Williams, D. R., & Jackson, J. S. (2001). Religious involvement, stress, and mental health: Findings from the 1995 Detroit Area Study. *Social Forces, 80*, 215-249. doi: 10.1353/sof.2001.0063
- Ellison, C. G., Gay, D. A., & Glass, T. A. (1989). Does religious commitment contribute to individual life satisfaction? *Social Forces, 68*, 100-123. doi: 10.2307/2579222
- Ellison, C. G., & George, L. K. (1994). Religious involvement, social ties, and social support in a southeastern community. *Journal for the Scientific Study of Religion, 33*, 46-61. doi: 10.2307/1386636
- Ellison, C. G., & Levin, J. S. (1998). The religion–health connection: Evidence, theory, and future directions. *Health Education & Behavior, 25*, 700-720. doi: 10.1177/109019819802500603
- Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York, NY US: Guilford Press.

- Emmons, R.A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life. In L.M. Corey & J. Haidt (Eds.). (pp. 105-128). *Flourishing: Positive psychology and the life well-lived*. Washington DC: US: American Psychological Association.
- Emmons, R. A., & Crumpler, C. A. (1999). Religion and spirituality? The roles of sanctification and the concept of God. *International Journal for the Psychology of Religion*, 9, 17-24. doi: 10.1207/s15327582ijpr0901_3
- Emmons, R. A., & Paloutzian, R. F. (2003). The psychology of religion. *Annual Review of Psychology*, 54, 377-402. doi: 10.1146/annurev.psych.54.101601.145024
- Fairchild, A. J., & MacKinnon, D. P. (2009). A general model for testing mediation and moderation effects. *Prevention Science*, 10, 87-99. doi: 10.1007/s11121-008-0109-6
- Fairchild, A. J., & MacKinnon, D. P. (2009). A general model for testing mediation and moderation effects. *Prevention Science*, 10(2), 87-99. doi: 10.1007/s11121-008-0109-6
- Fairchild, A. J., & McQuillin, S. D. (2010). Evaluating mediation and moderation effects in school psychology: A presentation of methods and review of current practice. *Journal of School Psychology*, 48, 53-84. doi: 10.1016/j.jsp.2009.09.001
- Fiori, K. L., Hays, J. C., & Meador, K. G. (2004). Spiritual turning points and perceived control over the life course. *The International Journal of Aging & Human Development*, 59, 391-420. doi: 10.2190/kbx1-18w0-fpj4-f1gy
- Fowler, J. W. (1981). *Stages of faith: the psychology of human development and the quest for meaning*. San Francisco: Harper & Row.
- Fowler, J. W. (1996). *Faithful change: The personal and public challenges of postmodern life*. Nashville, TN England: Abingdon Press.

- Fowler, J. W. (2001). Faith development theory and the postmodern challenges. *International Journal for the Psychology of Religion, 11*, 159-172. doi: 10.1207/s15327582ijpr1103_03
- Fowler, J. W. (2004). Faith development at 30: Naming the challenges of faith in a new millennium. *Religious Education, 99*, 405-421. doi: 10.1080/00344080490513036
- Fowler, F.W., & Dell, M.L. (2006). Stages of faith from infancy through adolescence: Reflections on three decades of faith development theory. In E.C. Roehlkepartain, P.E. King, L. Wagener, & P.L. Bensons (Eds.), *The handbook of spiritual development in childhood and adolescence*. (pp. 34-45). Thousand Oaks, CA: Sage Publications.
- Fowler, J. W., Streib, H., & Keller, B. (2004). *Manual for faith development research*. Retrieved January 22, 2011, from [http://rf.isert-network.com/ansea/FDR-Manual\(2004-11-19-preview\).pdf](http://rf.isert-network.com/ansea/FDR-Manual(2004-11-19-preview).pdf).
- Francis, L. J., Lewis, C. A., & Ng, P. (2002). Assessing attitude toward Christianity among Chinese speaking adolescents in Hong Kong: The Francis scale. *North American Journal of Psychology, 4*, 431-439.
- Francis, L. J., & McCarron, M. M. (1989). Measurement of attitudes toward Christianity among Nigerian secondary school students. *The Journal of Social Psychology, 129*, 569-571.
- Francis, L. J., Ziebertz, H.-G., & Lewis, C. A. (2003). The relationship between religion and happiness among German students. *Pastoral Psychology, 51*, 273-281. doi: 10.1023/a:1022529231234
- Frankel, B. G., & Hewitt, W. E. (1994). Religion and well-being among Canadian university students: The role of faith groups on campus. *Journal for the Scientific Study of Religion, 33*, 62-73. doi: 10.2307/1386637

- Frankl, V. E. (1984). *Man's search for meaning: An introduction to logotherapy* (3rd ed., pp. 189 p.). New York: Simon & Schuster.
- Frazier, C., Mintz, L. B., & Mobley, M. (2005). A multidimensional look at religious involvement and psychological well-being among urban elderly african americans. *Journal of Counseling Psychology, 52*, 583-590. doi: 10.1037/0022-0167.52.4.583
- Freud, S. (1964). *The future of an illusion*. Oxford England: Doubleday.
- Fuller, R. C. (2001). *Spiritual, but not religious: Understanding unchurched America*. Oxford New York: Oxford University Press.
- Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*, 199-223. doi: 10.1023/a:1025007614869
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26*, 331-362. doi: 10.1002/job.322
- Galek, K., Krause, N., Ellison, C. G., Kudler, T., & Flannelly, K. J. (2007). Religious doubt and mental health across the lifespan. *Journal of Adult Development, 14*(1-2). doi: 10.1007/s10804-007-9027-2
- Gallup. (2007). European Religion Retrieved July 23 2011, from <https://worldview.gallup.com/default.aspx>
- Gallup. (2010). Religion Retrieved July 23, 2011, from <http://www.gallup.com/poll/1690/Religion.aspx#1>
- Gallup. (2011). Religion Retrieved July 23, 2011, from <http://www.gallup.com/poll/1690/Religion.aspx#2>

- Gorsuch, R. L. (1984). Measurement: The boon and bane of investigating religion. *American Psychologist*, 39, 228-236. doi: 10.1037/0003-066x.39.3.228
- Gorsuch, R. L. (1988). Psychology of religion. *Annual Review of Psychology*, 39, 201-221. doi: 10.1146/annurev.ps.39.020188.001221
- Gorsuch, R. L. (2002). *Integrating psychology and spirituality?* Westport, CT: Praeger Publishers/Greenwood Publishing Group.
- Graham, J., & Haidt, J. (2010). Beyond beliefs: Religions bind individuals into moral communities. *Personality and Social Psychology Review*, 14, 140-150. doi: 10.1177/1088868309353415
- Greenfield, E. A., Vaillant, G. E., & Marks, N. E. (2009). Do formal religious participation and spiritual perceptions have independent linkages with diverse dimensions of psychological well-being? *Journal of Health and Social Behavior*, 50, 196-212. doi: 10.1177/002214650905000206
- Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory*. (pp. 135-161). Hoboken, NJ: John Wiley & Sons Inc.
- Hackney, C. H., & Sanders, G. S. (2003). Religiosity and mental health: A meta-analysis of recent studies. *Journal for the Scientific Study of Religion*, 42, 43-55. doi: 10.1111/1468-5906.t01-1-00160
- Hadaway, C. K. (1978). Life satisfaction and religion: A reanalysis. *Social Forces*, 57, 636-643. doi: 10.2307/2577686

- Hall, D. E., Meador, K. G., & Koenig, H. G. (2008). Measuring religiousness in health research: Review and critique. *Journal of Religion and Health, 47*, 134-163. doi: 10.1007/s10943-008-9165-2
- Hanford, J. T. (1993). Is the faith of faith development Christian faith? *Pastoral Psychology, 42*, 95-105. doi: 10.1007/bf01031102
- Haring-Hidore, M., Stock, W. A., Okun, M. A., & Witter, R. A. (1985). Marital status and subjective well-being: A research synthesis. *Journal of Marriage & Family, 47*, 947-953.
- Harrison, V. S. (2006). The pragmatics of defining religion in a multi-cultural world. *International Journal for Philosophy of Religion, 59*, 133-152.
- Hastings, P.K., & Hoge, D.R. (1976). Changes in religion among college students, 1948 to 1974. *Journal for the Scientific Study of Religion, 15*, 237-249.
- Hathcoat, J.D., & Fuqua, D.R. (2012). *Self-determination theory and the integration of numinous meaning*. Manuscript submitted for publication.
- Have, N. A. W. t., & Hutsebaut, D. (2005). Religie en subjectief welbevinden. Een letterlijk negatieve link. *Gedrag & Gezondheid: Tijdschrift voor Psychologie en Gezondheid, 33*(3), 181-197.
- Haybron, D. M. (2008). Philosophy and the science of subjective well-being. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being*. (pp. 17-43). New York, NY US: Guilford Press.
- Headey, B., Schupp, J., Tucci, I., & Wagner, G. G. (2010). Authentic happiness theory supported by impact of religion on life satisfaction: A longitudinal analysis with data for Germany. *The Journal of Positive Psychology, 5*, 73-82. doi: 10.1080/17439760903435232

- Hicks, J. A., & King, L. A. (2008). Religious commitment and positive mood as information about meaning in life. *Journal of Research in Personality, 42*, 43-57. doi: 10.1016/j.jrp.2007.04.003
- Hill, P. C. (2005). Measurement in the Psychology of Religion and Spirituality: Current status and evaluation. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality*. (pp. 43-61). New York, NY US: Guilford Press.
- Hill, P. C., & Hood, R. W. (1999). *Measures of religiosity*. Birmingham, Ala.: Religious Education Press.
- Hill, P. C., & Pargament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist, 58*, 64-74. doi: 10.1037/0003-066x.58.1.64
- Hill, P. C., Pargament, K. I., Hood, R. W., Jr., McCullough, M. E., Swyers, J. P., Larson, D. B., & Zinnbauer, B. J. (2000). Conceptualizing religion and spirituality: Points of commonality, points of departure. *Journal for the Theory of Social Behaviour, 30*, 51-77. doi: 10.1111/1468-5914.00119
- Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and Individual Differences, 33*, 1071-1082. doi: 10.1016/s0191-8869(01)00213-6
- Hodge, D. R., & McGrew, C. C. (2006). Spirituality, Religion, and the Interrelationship: A Nationally Representative Study. *Journal of Social Work Education, 42*, 637-654.
- Hoge, D. R. (1972). A validated intrinsic religious motivation scale. *Journal for the Scientific Study of Religion, 11*, 369-376. doi: 10.2307/1384677

- Hoyt, W. T., Imel, Z. E., & Chan, F. (2008). Multiple regression and correlation techniques: Recent controversies and best practices. *Rehabilitation Psychology, 53*, 321-339. doi: 10.1037/a0013021
- Idler, E. L., Musick, M. A., Ellison, C. G., George, L. K., Krause, N., Ory, M. G., . . . Williams, D. R. (2003). Measuring multiple dimensions of religion and spirituality for health research: Conceptual background and findings from the 1998 General Social Survey. *Research on Aging, 25*, 327-365. doi: 10.1177/0164027503025004001
- Imam, S. S., Nurullah, A. S., Makol-Abdul, P. R., Rahman, S. A., & Noon, H. M. (2009). Spiritual and psychological health of Malaysian youths. *Research in the Social Scientific Study of Religion, 20*, 85-110. doi: 10.1163/ej.9789004175624.i-334.28
- Jackson, B. R., & Bergeman, C. S. (2011). How does religiosity enhance well-being? The role of perceived control. *Psychology of Religion and Spirituality, 3*, 149-161. doi: 10.1037/a0021597
- James, L. R., & Brett, J. M. (1984). Mediators, moderators, and tests for mediation. *Journal of Applied Psychology, 69*, 307-321. doi: 10.1037/0021-9010.69.2.307
- James, W. (1902). *The varieties of religious experience: A study in human nature*. New York, NY US: Longmans, Green and Co.
- Johnston, M. M., & Finney, S. J. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the basic needs satisfaction in general scale. *Contemporary Educational Psychology, 35*, 280-296. doi: 10.1016/j.cedpsych.2010.04.003
- Juergensmeyer, M. (2006). Religion as a cause of terrorism. In L. Richardson (Ed.), *The roots of terrorism*. (pp. 133-144). New York, NY US: Routledge/Taylor & Francis Group.

- Jung, C. G. (1938). *Psychology and religion*. Oxford England: Yale Univ. Press.
- Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: The foundations of hedonic psychology*. New York, NY US: Russell Sage Foundation.
- Kahneman, D., & Krueger, A. B. (2006). Developments in the Measurement of Subjective Well-Being. *The Journal of Economic Perspectives*, 20, 3-24.
- Kane, M. (2001). Current concerns in validity theory. *Journal of Educational Measurement*, 38, 319-342. doi: 10.1111/j.1745-3984.2001.tb01130.x
- Kane, M. (2009). Validating the interpretations and uses of test scores. In R.W. Lissitz (Ed.), *The concept of validity* (pp. 39-64). Charlotte, NC: Information Age Publishing.
- Kapuscinski, A. N., & Masters, K. S. (2010). The current status of measures of spirituality: A critical review of scale development. *Psychology of Religion and Spirituality*, 2, 191-205. doi: 10.1037/a0020498
- Kashdan, T. B., Julian, T., Merritt, K., & Uswatte, G. (2006). Social anxiety and posttraumatic stress in combat veterans: Relations to well-being and character strengths. *Behaviour Research and Therapy*, 44(4), 561-583. doi: 10.1016/j.brat.2005.03.010
- Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review*, 14, 37-48. doi: 10.1177/1088868309353750
- Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology*, 95, 18-35. doi: 10.1037/0022-3514.95.1.18

- Kegan, R. (1982). *The evolving self: problem and process in human development*. Cambridge, Mass.: Harvard University Press.
- Kim-Prieto, C., & Diener, E. (2009). Religion as a source of variation in the experience of positive and negative emotions. *The Journal of Positive Psychology, 4*, 447-460. doi: 10.1080/17439760903271025
- Kirkpatrick, L. A. (1992). An attachment-theory approach to the psychology of religion. *International Journal for the Psychology of Religion, 2*, 3-28. doi: 10.1207/s15327582ijpr0201_2
- Koenig, H., G., McCullough, M. E., & Larson, D. B. (2001). *Handbook of Religion and Health*. Oxford: Oxford University Press.
- Koenig, H. G. (2008). Concerns about measuring 'spirituality' in research. *Journal of Nervous and Mental Disease, 196*, 349-355. doi: 10.1097/NMD.0b013e31816ff796
- Krause, N. (2002). Church-based social support and health in old age: Exploring variations by race. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences, 57B*, S332-S347.
- Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
- La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*, 367-384. doi: 10.1037/0022-3514.79.3.367

- Larsen, R. J., & Eid, M. (2008). Ed Diener and the science of subjective well-being. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being*. (pp. 1-13). New York, NY US: Guilford Press.
- Leak, G. K. (2008). Factorial validity of the Faith Development Scale. *International Journal for the Psychology of Religion, 18*, 123-131. doi: 10.1080/10508610701879399
- Leak, G. K., Loucks, A. A., & Bowlin, P. (1999). Development and initial validation of an objective measure of faith development. *International Journal for the Psychology of Religion, 9*, 105-124. doi: 10.1207/s15327582ijpr0902_2
- Leak, G. K., & Randall, B. A. (1995). Clarification of the link between right-wing authoritarianism and religiousness: The role of religious maturity. *Journal for the Scientific Study of Religion, 34*, 245-252. doi: 10.2307/1386769
- Lee, B. Y., & Newberg, A. B. (2005). Religion and health: A review and critical analysis. *Zygon: Journal of Religion & Science, 40*, 443-468. doi: 10.1111/j.1467-9744.2005.00674.x
- Lee, J.J. (2002). Religion and college attendance: Change among students. *Review of Higher Education: Journal of the Association for the Study of Higher Education, 25*, 369-384.
- Levin, J. (2002). Is depressed affect a function of one's relationship with God? Findings from a study of primary care patients. *International Journal of Psychiatry in Medicine, 32*, 379-393. doi: 10.2190/3183-wpyv-3kyy-k3v7
- Levin, J. S. (1997). Religious research in gerontology, 1980-1994: A systematic review. *Journal of Religious Gerontology, 10*, 3-31. doi: 10.1300/j078v10n03_02

- Levin, J. S., & Chatters, L. M. (1998). Research on religion and mental health: An overview of empirical findings and theoretical issues. In H. G. Koenig (Ed.), *Handbook of religion and mental health*. (pp. 33-50). San Diego, CA US: Academic Press.
- Levin, J. S., Markides, K. S., & Ray, L. A. (1996). Religious attendance and psychological well-being in Mexican Americans: A panel analysis of three-generations data. *The Gerontologist*, *36*, 454-463.
- Lewis, C. A., & Cruise, S. M. (2006). Religion and happiness: Consensus, contradictions, comments and concerns. *Mental Health, Religion & Culture*, *9*, 213-225. doi: 10.1080/13694670600615276
- Lewis, C. A., Joseph, S., & Noble, K. E. (1996). Is religiosity associated with life satisfaction? *Psychological Reports*, *79*, 429-430.
- Linley, P. A., Maltby, J., Wood, A. M., Osborne, G., & Hurling, R. (2009). Measuring happiness: The higher order factor structure of subjective and psychological well-being measures. *Personality and Individual Differences*, *47*, 878-884. doi: 10.1016/j.paid.2009.07.010
- Love, P. G. (2002). Comparing spiritual development and cognitive development. *Journal of College Student Development*, *43*(3), 357-373.
- Maassen, G. H., Bossema, E., & Brand, N. (2009). Reliable change and practice effects: Outcomes of various indices compared. *Journal of Clinical and Experimental Neuropsychology*, *31*, 339-352. doi: 10.1080/13803390802169059
- Mackenzie, E. R., Rajagopal, D. E., Meibohm, M., & Lavizzo-Mourey, R. (2000). Spiritual support and psychological well-being: older adults' perceptions of the religion and health connection. *Alternative Therapies In Health And Medicine*, *6*, 37-45.

- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. New York, NY: Taylor & Francis Group/Lawrence Erlbaum Associates.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual Review of Psychology*, *58*, 593-614. doi: 10.1146/annurev.psych.58.110405.085542
- MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, *1*, 173-181. doi: 10.1023/a:1026595011371
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83-104. doi: 10.1037/1082-989x.7.1.83
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence Limits for the Indirect Effect: Distribution of the Product and Resampling Methods. *Multivariate Behavioral Research*, *39*, 99-128. doi: 10.1207/s15327906mbr3901_4
- MacKinnon, D. P., Warsi, G., & Dwyer, J. H. (1995). A simulation study of mediated effect measures. *Multivariate Behavioral Research*, *30*, 41-62. doi: 10.1207/s15327906mbr3001_3
- Mallinckrodt, B., Abraham, W. T., Wei, M., & Russell, D. W. (2006). Advances in testing the statistical significance of mediation effects. *Journal of Counseling Psychology*, *53*, 372-378. doi: 10.1037/0022-0167.53.3.372
- Marler, P. L., & Hadaway, C. K. (2002). 'Being religious' or 'being spiritual' in America: A zero-sum proposition? *Journal for the Scientific Study of Religion*, *41*, 289-300. doi: 10.1111/1468-5906.00117

- Martin, C. (2009). Delimiting religion. *Method & Theory in the Study of Religion*, 21, 157-176.
doi: 10.1163/157006809x431015
- Martos, T., Thege, B. K., & Steger, M. F. (2010). It's not only what you hold, it's how you hold it: Dimensions of religiosity and meaning in life. *Personality and Individual Differences*, 49, 863-868. doi: 10.1016/j.paid.2010.07.017
- McCullough, M. E., Hoyt, W. T., Larson, D. B., Koenig, H. G., & Thoresen, C. (2000). Religious involvement and mortality: A meta-analytic review. *Health Psychology*, 19, 211-222. doi: 10.1037/0278-6133.19.3.211
- McIntosh, D. N. (1995). Religion-as-schema, with implications for the relation between religion and coping. *International Journal for the Psychology of Religion*, 5, 1-16. doi: 10.1207/s15327582ijpr0501_1
- McIntosh, D. N. (1995). Religion-as-schema, with implications for the relation between religion and coping. *International Journal for the Psychology of Religion*, 5, 1-16. doi: 10.1207/s15327582ijpr0501_1
- McKinnon, A. M. (2002). Sociological definitions, language games, and the 'essence' of religion. *Method & Theory in the Study of Religion*, 14, 61.
- Messick, S. (1975). The standard problem: Meaning and values in measurement and evaluation. *American Psychologist*, 30, 955-966. doi: 10.1037/0003-066x.30.10.955
- Messick, S. (1980). Test validity and the ethics of assessment. *American Psychologist*, 35, 1012-1027. doi: 10.1037/0003-066x.35.11.1012
- Messick, S. (1981). Constructs and their vicissitudes in educational and psychological measurement. *Psychological Bulletin*, 89, 575-588. doi: 10.1037/0033-2909.89.3.575

- Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist*, *50*, 741-749. doi: 10.1037/0003-066x.50.9.741
- Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health: An emerging research field. *American Psychologist*, *58*, 24-35. doi: 10.1037/0003-066x.58.1.24
- Moberg, D. O. (2010). Spirituality research: Measuring the immeasurable? *Perspectives on Science and Christian Faith*, *62*, 99-114.
- Mochon, D., Norton, M. I., & Ariely, D. (2008). Getting off the hedonic treadmill, one step at a time: The impact of regular religious practice and exercise on well-being. *Journal of Economic Psychology*, *29*, 632-642. doi: 10.1016/j.joep.2007.10.004
- Molendijk, A. L. (1999). In defense of pragmatism. In J. G. Platvoet & A. L. Molendijk (Eds.), *The pragmatics of defining religion: Contexts, concepts, & contests* (pp. 3-23). Netherlands: Die Deutsche Bibliothek.
- Moreira-Almeida, A., & Koenig, H. G. (2006). Retaining the meaning of the words religiousness and spirituality: a commentary on the WHOQOL SRPB group's "a cross-cultural study of spirituality, religion, and personal beliefs as components of quality of life" (62: 6, 2005, 1486-1497). *Social Science & Medicine* (1982), *63*, 843-845.
- Moreira-Almeida, A., Neto, F. L., & Koenig, H. G. (2006). Religiousness and mental health: A review. *Revista Brasileira de Psiquiatria*, *28*, 242-250.
- Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, *89*, 852-863. doi: 10.1037/0022-3514.89.6.852

- Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist*, *55*, 56-67. doi: 10.1037/0003-066x.55.1.56
- Myers, D. G. (2008). Religion and human flourishing. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being*. (pp. 323-343). New York, NY US: Guilford Press.
- Neurath, O. (1921). *Antispengler* (T. Parzen, Trans.). Munich: Callwey. As cited in Zumbo, B.D. (2009). Validity as contextualized and pragmatic explanation and its implications for validation practice. In R.W. Lissitz (Ed.), *The concept of validity* (pp. 65-82). Charlotte, NC: Information Age Publishing.
- Neyrinck, B., Vansteenkiste, M., Lens, W., Duriez, B., & Hutsebaut, D. (2006). Cognitive, affective and behavioral correlates of internalization of regulations for religious activities. *Motivation and Emotion*, *30*, 323-334. doi: 10.1007/s11031-006-9048-3
- Nichols, L. M., & Hunt, B. (2011). The significance of spirituality for individuals with chronic illness: Implications for mental health counseling. *Journal of Mental Health Counseling*, *33*(1), 51-66.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, *97*, 444-453. doi: 10.1037/0022-0663.97.3.444
- O'Connor, B. P., & Vallerand, R. J. (1990). Religious motivation in the elderly: A French-Canadian replication and an extension. *The Journal of Social Psychology*, *130*, 53-59.
- Oman, D., & Thoresen, C. E. (2005). Do religion and spirituality influence health? In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality*. (pp. 435-459). New York, NY US: Guilford Press.

- Osler, W. (1910). The faith that heals. *British Medical Journal, I*, 1470-1472. doi: 10.1136/bmj.1.2581.1470
- Paloutzian, R. F., & Park, C. L. (2005). Integrative Themes in the Current Science of the Psychology of Religion. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality*. (pp. 3-20). New York, NY US: Guilford Press.
- Pargament, K. I. (1997). *The psychology of religion and coping: Theory, research, practice*. New York, NY US: Guilford Press.
- Pargament, K. I., Kennell, J., Hathaway, W., & Grevengoed, N. (1988). Religion and the problem-solving process: Three styles of coping. *Journal for the Scientific Study of Religion, 27*, 90-104. doi: 10.2307/1387404
- Pargament, K. I., Magyar-Russell, G. M., & Murray-Swank, N. A. (2005). The sacred and the search for significance: Religion as a unique process. *Journal of Social Issues, 61*, 665-687. doi: 10.1111/j.1540-4560.2005.00426.x
- Park, C. L. (2005). Religion and Meaning. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality*. (pp. 295-314). New York, NY US: Guilford Press.
- Park, C. L. (2005). Religion as a meaning-making framework in coping with life stress. *Journal of Social Issues, 61*, 707-729. doi: 10.1111/j.1540-4560.2005.00428.x
- Parker, S. (2006). Measuring faith development. *Journal of Psychology and Theology, 34*, 337-348.

- Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology, 3*, 137-152. doi: 10.1080/17439760701756946
- Peacock, J. R., & Poloma, M. M. (1999). Religiosity and life satisfaction across the life course. *Social Indicators Research, 48*, 321-345. doi: 10.1023/a:1006928028270
- Peet, C. (2005). Defining religion: strategies and reflections on an elusive figure. *Journal of Psychology and Christianity, 24*(2), 105-112.
- Piedmont, R. L. (1999). Does spirituality represent the sixth factor of personality? Spiritual transcendence and the Five-Factor Model. *Journal of Personality, 67*, 985-1013. doi: 10.1111/1467-6494.00080
- Plante, T. G., & Boccaccini, M. (1997). Reliability and validity of the Santa Clara Strength of Religious Faith Questionnaire. *Pastoral Psychology, 45*, 429-437. doi: 10.1007/bf02310643
- Plante, T. G., & Sherman, A. C. (2001). Research on faith and health. In T. G. Plante & A. C. Sherman (Eds.), *Faith and Health: A Psychological Perspective* (pp. 1-12). New York: Guilford Press.
- Pollner, M. (1989). Divine relations, social relations, and well-being. *Journal of Health and Social Behavior, 30*, 92-104. doi: 10.2307/2136915
- Powell, L. H., Shahabi, L., & Thoresen, C. E. (2003). Religion and spirituality: Linkages to physical health. *American Psychologist, 58*, 36-52. doi: 10.1037/0003-066x.58.1.36

- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theories, methods, and prescriptions. *Multivariate Behavioral Research, 42*, 185-227.
- Rapp, S. R., Rejeski, W. J., & Miller, M. E. (2000). Physical function among older adults with knee pain: the role of pain coping skills. *Arthritis Care And Research: The Official Journal Of The Arthritis Health Professions Association, 13*, 270-279.
- Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear modeling: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Reeve, C. L., & Lam, H. (2005). The psychometric paradox of practice effects due to retesting: Measurement invariance and stable ability estimates in the face of observed score changes. *Intelligence, 33*, 535-549. doi: 10.1016/j.intell.2005.05.003
- Robbins, M., Francis, L. J., & Edwards, B. (2008). Prayer, personality and happiness: A study among undergraduate students in Wales. *Mental Health, Religion & Culture, 11*, 93-99. doi: 10.1080/13674670701702548
- Roemer, M. K. (2010). Religion and psychological distress in Japan. *Social Forces, 89*, 559-583.
- Rosmarin, D. H., Pargament, K. I., & Mahoney, A. (2009). The role of religiousness in anxiety, depression, and happiness in a Jewish community sample: A preliminary investigation. *Mental Health, Religion & Culture, 12*, 97-113. doi: 10.1080/13674670802321933
- Rothlisberger, A. R. (2010). *Latter-day saint and other Christian spirituality, religiosity, personality, and self-efficacy as predictors of emergency preparedness and subjective well-being* (Doctoral dissertation). Retrieved from ProQuest Information and Learning. (3377728).

- Rowatt, W. C., & Kirkpatrick, L. A. (2002). Two dimensions of attachment to God and their relation to affect, religiosity, and personality constructs. *Journal for the Scientific Study of Religion, 41*, 637-651. doi: 10.1111/1468-5906.00143
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397-427. doi: 10.1111/j.1467-6494.1995.tb00501.x
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749-761. doi: 10.1037/0022-3514.57.5.749
- Ryan, R. M., & Deci, E. L. (2000). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry, 11*, 319-338. doi: 10.1207/s15327965pli1104_03
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78. doi: 10.1037/0003-066x.55.1.68
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166. doi: 10.1146/annurev.psych.52.1.141
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality, 74*, 1557-1586. doi: 10.1111/j.1467-6494.2006.00420.x
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9*, 139-170. doi: 10.1007/s10902-006-9023-4

- Ryan, R. M., Rigby, S., & King, K. (1993). Two types of religious internalization and their relations to religious orientations and mental health. *Journal of Personality and Social Psychology, 65*, 586-596. doi: 10.1037/0022-3514.65.3.586
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069-1081. doi: 10.1037/0022-3514.57.6.1069
- Ryff, C. D. (1995). Psychological well-being in adult life. *Current Directions in Psychological Science, 4*, 99-104. doi: 10.1111/1467-8721.ep10772395
- Ryff, C. D., & Singer, B. (1998). Human health: New directions for the next millennium. *Psychological Inquiry, 9*, 69-85. doi: 10.1207/s15327965pli0901_11
- Ryff, C. D., & Singer, B. (2000). Interpersonal flourishing: A positive health agenda for the new millennium. *Personality and Social Psychology Review, 4*, 30-44. doi: 10.1207/s15327957pspr0401_4
- Ryff, C. D., & Singer, B. H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *Journal of Happiness Studies, 9*, 13-39. doi: 10.1007/s10902-006-9019-0
- Salsman, J. M., Brown, T. L., Brechting, E. H., & Carlson, C. R. (2005). The link between religion and spirituality and psychological adjustment: The mediating role of optimism and social support. *Personality and Social Psychology Bulletin, 31*, 522-535. doi: 10.1177/0146167204271563
- Schieman, S., Pudrovska, T., & Milkie, M. A. (2005). The sense of divine control and the self-concept: A study of race differences in late life. *Research on Aging, 27*, 165-196. doi: 10.1177/0164027504270489

- Schieman, S., Pudrovska, T., Pearlin, L. I., & Ellison, C. G. (2006). The sense of divine control and psychological distress: Variations across race and socioeconomic status. *Journal for the Scientific Study of Religion*, *45*, 529-549. doi: 10.1111/j.1468-5906.2006.00326.x
- Schimmack, U., & Oishi, S. (2005). The influence of chronically and temporarily accessible information on life satisfaction judgments. *Journal of Personality and Social Psychology*, *89*, 395-406. doi: 10.1037/0022-3514.89.3.395
- Schlehofer, M. M., Omoto, A. M., & Adelman, J. R. (2008). How do 'religion' and 'spirituality' differ? Lay definitions among older adults. *Journal for the Scientific Study of Religion*, *47*, 411-425. doi: 10.1111/j.1468-5906.2008.00418.x
- Schuurmans-Stekhoven, J.B. (2010). Is it God or just the data that moves in mysterious ways? How well-being research may be mistaking faith for virtue. *Social Indicators Research*, *100*, 313-330. doi: 0.1007/s11205-010-9630-7.
- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, *54*, 93-105. doi: 10.1037/0003-066x.54.2.93
- Seligman, M.E.P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York: NY: The Free Press.
- Seligman, M.E.P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, *55*, 5-14. doi: 10.1037//0003-066X.55.1.5
- Sethi, S., & Seligman, M. E.P. (1993). Optimism and fundamentalism. *Psychological Science*, *4*, 256-259. doi: 10.1111/j.1467-9280.1993.tb00271.x
- Sethi, S., & Seligman, M. E. P. (1994). The hope of fundamentalists. *Psychological Science*, *5*(1). doi: 10.1111/j.1467-9280.1994.tb00616.x

- Seybold, K. S., & Hill, P. C. (2001). The role of religion and spirituality in mental and physical health. *Current Directions in Psychological Science, 10*, 21-24. doi: 10.1111/1467-8721.00106
- Sherman, A. C., Simonton, S., Adams, D. C., Latif, U., Plante, T. G., Burns, S. K., & Poling, T. (2001). Measuring religious faith in cancer patients: Reliability and construct validity of the Santa Clara Strength of Religious Faith Questionnaire. *Psycho-Oncology, 10*, 436-443. doi: 10.1002/pon.523
- Silberman, I. (2005). Religion as a meaning system: Implications for the new millennium. *Journal of Social Issues, 61*, 641-663. doi: 10.1111/j.1540-4560.2005.00425.x
- Slife, B.D., & Richardson, F.C. (2008). Problematic ontological underpinnings of positive psychology: A strong relational alternative. *Theory and Psychology, 18*, 699-723. doi: 0.1177/0959354308093403
- Sloan, R. P., & Bagiella, E. (2001). Religion and health. *Health Psychology, 20*, 228. doi: 10.1037/0278-6133.20.3.228
- Sloan, R. P., & Bagiella, E. (2002). Claims about religious involvement and health outcomes. *Annals of Behavioral Medicine, 24*, 14-21. doi: 10.1207/s15324796abm2401_03
- Sloan, R. P., Bagiella, E., & Powell, T. (1999). Religion, spirituality, and medicine. *Lancet, 353*, 664-667.
- Sloan, R. P., Bagiella, E., & Powell, T. (2001). Without a prayer: Methodological problems, ethical challenges, and misrepresentations in the study of religion, spirituality, and medicine. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives*. (pp. 339-354). New York, NY US: Guilford Press.

- Smith, W. C. (1963). *The meaning and end of religion; A new approach to the religious traditions of mankind*. New York, NY: Macmillan.
- Snarey, J. (1991). Faith development, moral development, and nontheistic Judaism: A construct validity study. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development, Vol. 1: Theory; Vol. 2: Research; Vol. 3: Application*. (pp. 279-305). Hillsdale, NJ England: Lawrence Erlbaum Associates, Inc.
- Snedden, D. (1931). Practice effect. *The Journal of Educational Research*, 24, 376-380.
- Snoep, L. (2008). Religiousness and happiness in three nations: A research note. *Journal of Happiness Studies*, 9, 207-211. doi: 10.1007/s10902-007-9045-6
- Speck, B. W. (2005). What is spirituality? *New Directions for Teaching & Learning*, 104, 3-13.
- Spilka, B., Hood, R. W., Hunsberger, B., & Gorsuch, R. (2003). *The psychology of religion: An empirical approach (3rd ed.)*. New York, NY US: Guilford Press.
- Spilka, B., Shaver, P. R., & Kirkpatrick, L. A. (1997). A general attribution theory for the psychology of religion. In B. Spilka & D. N. McIntosh (Eds.), *The psychology of religion: Theoretical approaches*. (pp. 153-170). Boulder, CO US: Westview Press.
- Stark, R., & Maier, J. (2008). Faith and happiness. *Review of Religious Research*, 50, 120-125.
- Steger, M. F., & Frazier, P. (2005). Meaning in Life: One Link in the Chain From Religiousness to Well-Being. *Journal of Counseling Psychology*, 52(4), 574-582. doi: 10.1037/0022-0167.52.4.574
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53, 80-93. doi: 10.1037/0022-0167.53.1.80

- Steger, M. F., & Kashdan, T. B. (2007). Stability and specificity of meaning in life and life satisfaction over one year. *Journal of Happiness Studies*, 8(2), 161-179. doi: 10.1007/s10902-006-9011-8
- Steger, M. F., Kashdan, T. B., Sullivan, B. A., & Lorentz, D. (2008). Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of Personality*, 76, 199-228. doi: 10.1111/j.1467-6494.2007.00484.x
- Steger, M. F., Pickering, N. K., Adams, E., Burnett, J., Shin, J. Y., Dik, B. J., & Stauner, N. (2010). The quest for meaning: Religious affiliation differences in the correlates of religious quest and search for meaning in life. *Psychology of Religion and Spirituality*, 2, 206-226. doi: 10.1037/a0019122
- Stoppa, T.M., & Lefkowitz, E.S. (2010). Longitudinal changes in religiosity among emerging adult college students. *Journal of Research on Adolescence*, 20, 23-38. doi: 10.1111/j.1532-7795.2009.00630.x
- Streib, H. (2001). Faith development theory revisited: The religious styles perspective. *International Journal for the Psychology of Religion*, 11, 143-158. doi: 10.1207/s15327582ijpr1103_02
- Streib, H. (2005). Faith Development Research Revisited: Accounting for Diversity in Structure, Content, and Narrativity of Faith. *International Journal for the Psychology of Religion*, 15(2), 99-121. doi: 10.1207/s15327582ijpr1502_1
- Streib, H., Hood, R. W., Jr., & Klein, C. (2010). The Religious Schema Scale: Construction and initial validation of a quantitative measure for religious styles. *International Journal for the Psychology of Religion*, 20, 151-172. doi: 10.1080/10508619.2010.481223

- Swinyard, W. R., Kau, A.-K., & Phua, H.-Y. (2001). Happiness, materialism, and religious experience in the US and Singapore. *Journal of Happiness Studies*, 2, 13-32. doi: 10.1023/a:1011596515474
- Thoresen, C. E., Harris, A. H. S., & Oman, D. (2001). Spirituality, religion, and health: Evidence, issues, and concerns. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives*. (pp. 15-52). New York, NY US: Guilford Press.
- Tillich, P. (1956). *Dynamics of faith*. New York: Harper.
- Tisdell, E. J. (2003). *Exploring spirituality and culture in adult and higher education*. San Francisco, CA: Jossey-Bass.
- Trent, J., & King, L. A. (2010). Predictors of rapid versus thoughtful judgments of meaning in life. *The Journal of Positive Psychology*, 5, 439-451. doi: 10.1080/17439760.2010.534106
- Tsang, J.-A., & McCullough, M. E. (2003). Measuring religious constructs: A hierarchical approach to construct organization and scale selection. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures*. (pp. 345-360). Washington, DC US: American Psychological Association.
- Turnock, B. J. (2009). *Public health: What it is and how it works* (4th ed.). Sudury, MA: Jones and Bartlett Publishers.
- Underwood, L. G., & Teresi, J. A. (2002). The Daily Spiritual Experience Scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. *Annals of Behavioral Medicine*, 24, 22-33. doi: 10.1207/s15324796abm2401_04

- Vansteenkiste, M., Neyrinck, B., Niemiec, C. P., Soenens, B., De Witte, H., & Van den Broeck, A. (2007). On the relations among work value orientations, psychological need satisfaction and job outcomes: A self-determination theory approach. *Journal of Occupational and Organizational Psychology, 80*, 251-277. doi: 10.1348/096317906x111024
- Vassar, M. (2008). A note on the score reliability for the satisfaction with life scale: An RG study. *Social Indicators Research, 86*, 47-57. doi: 10.1007/s11205-007-9113-7
- Warner, J. (2007). *Majority of doctors believe religion is good for your health*. Retrieved August 22, 2011 from <http://www.foxnews.com/story/0,2933,265121,00.html>.
- Waterman, A. S. (2008). Reconsidering happiness: A eudaimonist's perspective. *The Journal of Positive Psychology, 3*(4), 234-252. doi: 10.1080/17439760802303002
- Waterman, A. S., Schwartz, S. J., & Conti, R. (2008). The implications of two conceptions of happiness (hedonic enjoyment and eudaimonia) for the understanding of intrinsic motivation. *Journal of Happiness Studies, 9*(1), 41-79. doi: 10.1007/s10902-006-9020-7
- Weaver, A. J., Pargament, K. I., Flannelly, K. J., & Oppenheimer, J. E. (2006). Trends in the scientific study of religion, spirituality, and health: 1965-2000. *Journal of Religion and Health, 45*(2), 208-214. doi: 10.1007/s10943-006-9011-3
- WHOQOL. (2006). A cross-cultural study of spirituality, religion, and personal beliefs as components of quality of life. *Social Science & Medicine (1982), 62*, 1486-1497.
- Witmer, R. A., Stock, W. A., Okun, M. A., & Earing, M. J. (1985). Religion and subjective well-being in adulthood: A quantitative synthesis. *Review of Religious Research, 26*, 332.

- Worthington, E. L. (1988). Understanding the values of religious clients: A model and its application to counseling. *Journal of Counseling Psychology, 35*, 166-174. doi: 10.1037/0022-0167.35.2.166
- Worthington, E. L., Jr., Kurusu, T. A., McCollough, M. E., & Sandage, S. J. (1996). Empirical research on religion and psychotherapeutic processes and outcomes: A 10-year review and research prospectus. *Psychological Bulletin, 119*, 448-487. doi: 10.1037/0033-2909.119.3.448
- Worthington, E. L., Jr., & Sandage, S. J. (2001). Religion and spirituality. *Psychotherapy: Theory, Research, Practice, Training, 38*, 473-478. doi: 10.1037/0033-3204.38.4.473
- Worthington, E. L., Jr., Wade, N. G., Hight, T. L., Ripley, J. S., McCullough, M. E., Berry, J. W., . . . O'Connor, L. (2003). The Religious Commitment Inventory--10: Development, refinement, and validation of a brief scale for research and counseling. *Journal of Counseling Psychology, 50*(1), 84-96. doi: 10.1037/0022-0167.50.1.84
- Wulff, D. M. (1997). *Psychology of religion: Classic and contemporary (2nd ed.)*. Oxford England: John Wiley & Sons.
- Zinnbauer, B. J., & Pargament, K. I. (2005). Religiousness and Spirituality. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality*. (pp. 21-42). New York, NY US: Guilford Press.
- Zinnbauer, B. J., Pargament, K. I., Cole, B., Rye, M. S., Butter, E. M., Belavich, T. G., . . . Kadar, J. L. (1997). Religion and spirituality: Unfuzzifying the fuzzy. *Journal for the Scientific Study of Religion, 36*(4), 549-564. doi: 10.2307/1387689

Zinnbauer, B. J., Pargament, K. I., & Scott, A. B. (1999). The emerging meanings of religiousness and spirituality: Problems and prospects. *Journal of Personality*, 67(6), 889-919. doi: 10.1111/1467-6494.00077

APPENDIX A

Principal Axis Factor Analysis of Religious/Spiritual Basic Psychological Needs Questionnaire using Obliman Rotation

Item	Relatedness	Self-Mastery	h ²
DIV1. My religious/spiritual views give me a sense of being connected to the divine.	.86 (.85)		.74
DIV2. I feel closer to a divine reality or being through my religious/spiritual worldview.	.82 (.84)		.62
DIV3. I am linked to a divine reality or being.	.91 (.93)		.83
SOC1. I feel strongly connected to other people as a result of my religious/spiritual worldview.	.86 (.86)		.74
SOC2. Significant others value my religious/spiritual worldview.	.83 (.82)		.68
SOC3. My religious/spiritual views have fostered many close relationships.	.65 (.56)		.71
SOC4. My religious/spiritual views give me a sense of connection to other people.	.84 (.81)		.76
SOC5. My religious/spiritual worldview is valued by people I care about.	.40 (.41)		.15
AUT1. I feel like I am free to decide what religious/spiritual views to follow.		.72 (.79)	.54
AUT2. I have had plenty of opportunities to decide for myself what religious/spiritual views to accept.		.73 (.72)	.54
AUT3. My views toward religious/spiritual issues are of my own choosing.	.51	.71 (.60)	.55
AUT4. I have consciously selected my views toward religion/spirituality.		.74 (.76)	.55
COM1. I feel competent in deciding what religious/spiritual views to follow.		.67 (.49)	.47
COM2. I feel very capable of determining what religious/spiritual views fit me best.		.57 (.67)	.43

COM3. I feel confident in my ability to evaluate religious/spiritual issues.	.58 (41)	.57 (.40)	..46
Initial Eigenvalues	7.03	2.27	
% of variance accounted for after rotation	44.36	12.27	

Note: All estimates are provided after oblique rotation; DIV = items referring to connection with a divine being; SOC = items referring to interpersonal connections resultant from religious/spiritual worldviews; AUT = items referring to sense that religious/spiritual views are self-determined; COM = items referring to sense of competence in evaluating religious/spiritual issues; Pattern coefficients are in parentheses; h^2 = communality estimates after extraction. Coefficients with an absolute value below .40 are not shown. Factors are inter-correlated at .43, $p < .001$.

APPENDIX B

Oklahoma State University Institutional Review Board

Date: Friday, December 16, 2011
IRB Application No ED11206
Proposal Title: Hierarchical Organization of Numinous Constructs, Basic Psychological Need Fulfillment, and Psychological Outcomes: A Moderated Mediation Model
Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 12/15/2012

Principal Investigator(s):
John Hathcoat Dale Fuqua
107 UAT 444 Willard
Stillwater, OK 74078 Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

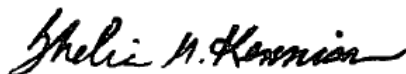
The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

APPENDIX C

Professor <NAME>

My name is John Hathcoat, a doctoral candidate here at Oklahoma State University. I'm conducting research on religious and spiritual worldviews as part of my dissertation. As part of this research participants are asked to **complete a survey that should take about 10-15 minutes.**

Could I please come by your class to sample your students? All participants will be offered a chance to win 1 of 10 \$20 dollar gift cards for their participation.

There is also an online survey available at the following link:

https://www.surveymonkey.com/s/Rel_well_being

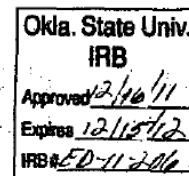
Could you please send this link to your online students?

Anything that you could do to help is greatly appreciated!

If you have any questions about this survey you may contact me at 405-744-3463 /john.hathcoat@okstate.edu or my advisor Dr. Dale Fuqua at 405-744-9443/ dr.fuqua@okstate.edu.

Thank you,

John D. Hathcoat M.S.
Statistical Analyst
University Assessment and Testing
Oklahoma State University
405-744-3463



APPENDIX D

Religiosity, Spirituality and Well-Being

Investigator: John D. Hathcoat M.S., Oklahoma State University

Purpose: The purpose of this research study is to better understand the connection among individual religious/spiritual worldviews and psychological well-being. This survey requires you to answer a series of questions pertaining to your religious/spiritual behavior, beliefs, and values. Some questions also pertain to your psychological well-being.

Procedures: Participation in this project requires that you answer a series of questions about your religious and spiritual worldview, as well as your general well-being. Most questions ask you to rate your level of agreement or disagreement with statements pertaining to your beliefs about religion, spirituality, and other psychological constructs. It is expected that it will take about 10-15 minutes to complete the survey.

Risks: The only potential risk with this project is a breach of confidentiality. No one, aside from the investigators listed above, his advisor, and members of the IRB will have access to your initial responses. No other risks are anticipated beyond what is experienced in daily life.

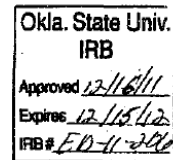
Benefits: This information will contribute to our theoretical understanding of the association among religious/spiritual indicators and psychological adjustment.

Confidentiality: All data will be stored on a CD-ROM, which will be placed under lock and key by the principal investigator. Once entered into a statistical program all physical data will be destroyed. No one, aside from the principal investigators, their advisor, and IRB members will have initial access to the data. You are not required to participate in the drawing for the gift cards. If you choose to participate your name will be stored separately from your actual responses. All names will be destroyed after all winners have been randomly selected. Any electronic copies of the data will be destroyed within 5 years of data collection. By completing this survey you are giving consent to participate.

Compensation: All participants will be offered a chance to win 1 of 10 \$20 dollar gift cards. This is completely voluntary and you may participate in the study without participating in the drawing. Upon completing data collection winners for the gift card will be selected at random.

Contacts: If you have any questions about the research or your rights as a participant in this study, please feel free to contact John D. Hathcoat at 918-519-0422/john.hathcoat@okstate.edu or his advisor Dr. Dale Fuqua at 405-744-9443/ dr.fuqua@okstate.edu . If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

Participant Rights: Participation in the present study is strictly voluntary. You may choose not to participate at any time without any penalty or problem. If you decide to participate, you may also withdraw at any time.



APPENDIX E

Investigator: John D. Hathcoat M.S., Oklahoma State University

Purpose: The purpose of this research study is to better understand the connection among individual religious/spiritual worldviews and psychological well-being. This survey requires you to answer a series of questions pertaining to your religious/spiritual behavior, beliefs, and values. Some questions also pertain to your psychological well-being.

Procedures: Participation in this project requires that you answer a series of questions about your religious and spiritual worldview, as well as your general well-being. Most questions ask you to rate your level of agreement or disagreement with statements pertaining to your beliefs about religion, spirituality, and other psychological constructs. It is expected that it will take about 10-15 minutes to complete the survey.

Risks: The only potential risk with this project is a breach of confidentiality. No one, aside from the investigators listed above, his advisor, and members of the IRB will have access to your initial responses. No other risks are anticipated beyond what is experienced in daily life.

Benefits: This information will contribute to our theoretical understanding of the association among religious/spiritual indicators and psychological adjustment.

Confidentiality: All data will be stored on a CD-ROM, which will be placed under lock and key by the principal investigator. Data for this online survey is initially stored on SurveyMonkey and is SSL encrypted. No identifying information is collected on this survey (e.g. IP addresses). Once entered into a statistical program all data on SurveyMonkey will be deleted. No one, aside from the principal investigators, their advisor, and IRB members will have initial access to the data. You are not required to participate in the drawing for the gift cards. If you choose to participate your name will be stored separately from your actual responses. All names will be destroyed after all winners have been randomly selected. Any electronic copies of the data will be destroyed within 5 years of data collection. By completing this survey you are giving consent to participate.

Compensation: All participants will be offered a chance to win 1 of 10 \$20 dollar gift cards. This is completely voluntary and you may participate in the study without participating in the drawing. Upon completing data collection winners for the gift card will be selected at random.

Contacts: If you have any questions about the research or your rights as a participant in this study, please feel free to contact John D. Hathcoat at 918-519-0422/john.hathcoat@okstate.edu or his advisor Dr. Dale Fuqua at 405-744-9443/dr.fuqua@okstate.edu. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

Participant Rights: Participation in the present study is strictly voluntary. You may choose not to participate at any time without any penalty or problem. If you decide to participate, you may also withdraw at any time.

1. Have you participated in another research project about religion or spirituality within the past year?

No

Yes

2. Would you like to participate in the present research study?

Yes, I agree to participate

No thank you

Okla. State Univ. IRB
Approved 12/16/11
Expires 12/15/12
IRB# E0-11-206

VITA

John David Hathcoat

Candidate for the Degree of

Doctor of Philosophy

Thesis: CATEGORICAL ORGANIZATION OF NUMINOUS CONSTRUCTS, BASIC PSYCHOLOGICAL NEED FULFILLMENT, AND POSITIVE PSYCHOLOGICAL OUTCOMES: A MODERATED MEDIATION MODEL

Major Field: Educational Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in December, 2012.

Completed the requirements for the Master of Science in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in 2008.

Completed the requirements for the Bachelor of Science in Social and Behavioral Science at Rogers State University, Claremore, Oklahoma in 2005.

Experience: John has acted as a statistical analyst in the Office of Assessment and Testing at Oklahoma State University since November 2010. Prior to his position at OSU he served as a statistics lab coordinator at Oklahoma University-Tulsa and taught as an adjunct instructor in the Mathematics and Science Department at Tulsa Community College. John has also taught introductory statistics and research methods within the School of Educational Studies at Oklahoma State University.

Professional Memberships: American Educational Research Association, American Psychological Association, Society for the Scientific Study of Religion, Association for the Assessment of Learning in Higher Education.

Name: John David Hathcoat

Date of Degree: December, 2012

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: CATEGORICAL ORGANIZATION OF NUMINOUS CONSTRUCTS,
BASIC PSYCHOLOGICAL NEED FULFILLMENT, AND
PSYCHOLOGICAL OUTCOMES: A MODERATED MEDIATION
MODEL

Pages in Study: 153

Candidate for the Degree of Doctor of Philosophy

Major Field: Educational Psychology

Scope and Method of Study: Numerous efforts have been made to understand the often observed association among numinous constructs and positive psychological outcomes. Identification of third variable effects is problematized by both a general dearth of theoretical guidance and conceptual ambiguity in the operationalization of numinous measures. The present study utilized self-determination theory and a categorization of numinous constructs aligned with the multilevel paradigm to frame model specification. According to self-determination theorists' basic psychological need fulfillment constitutes a path toward positive psychological outcomes. However, the multi-level paradigm suggests that numinous measures may be divided according their substantive and functional characteristics. This led to two proposals that were examined within the current study. First, two simple mediation models were examined utilizing the presence of meaning in life and satisfaction with life as outcome variables. These models specified that the effect of substantive religiosity (i.e. religious commitment) on these outcomes were mediated by basic psychological need fulfillment (i.e. religious/spiritual self-mastery). It was further predicted that the effect of substantive religiosity on basic psychological need fulfillment would be moderated by measures of functional religiosity. Faith development, as conceived by James Fowler (1981), was utilized as an indicator of functional religiosity. A convenient sample of 651 undergraduate students completed a battery of measures as indicators of the specified model.

Findings and Conclusions: A normal theory and bootstrapping procedure both supported a simple mediation model, wherein the effect of religious commitment on the presence of meaning in life was mediated by religious/spiritual self-mastery. Statistical criteria failed to fully support a similar model when using satisfaction with life as an outcome variable. A moderated mediation hypothesis was then examined when utilizing the presence of meaning in life as an outcome variable. Evidence supported faith development as a moderator of the path from religious commitment to self-mastery. Follow-up analyses indicated that the size of the indirect effect decreased as faith development scores increased. Results imply that greater attention should be given to the identification of contingencies in proposed third variable effects that aim to account for observed correlations.

ADVISER'S APPROVAL: Dr. Dale Fuqua
