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DOGMATISM, COPING, AND SPIRITUALITY:  
PREDICTING MENTAL HEALTH AMONG THE RELIGIOUS AND THE SECULAR

By

Jonathan T. Moore  
B.A., University of Texas at Dallas, 2007  
M.Ed., University of Louisville, 2012

A Dissertation  
Submitted to the Faculty of the  
College of Education and Human Development of the University of Louisville  
in Partial Fulfillment of the Requirements  
for the Degree of

Doctor of Philosophy

Department of Educational & Counseling Psychology  
University of Louisville  
Louisville, Kentucky

August 2014



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A Dissertation Approved on

October 28, 2013

by the following Dissertation Committee:

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Mark Leach

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Jesse Owen

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Brad Shuck

## DEDICATION

This is for my father, Scott Moore. We have had so many conversations throughout the years about all things existential and I cannot think of another person who has been more of an impetus for my work on this project. You have to be the most compelling case that exhibits the value of living a spiritual life. Knowing you has been a blessing, and striving to live with the same essence as you will always be that destination that I will never quite be able to reach because you are truly of the rarest caliber. I will forever treasure being your son. I love you.

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A special thanks goes out to Drs. Jesse Owen, Patrick Pössel, Brad Shuck, and to my committee chair, Dr. Mark Leach. Without your meticulous examination of each draft and your engagement in such potent discussions, this project would not have reached its full potential. I am appreciative of your efforts and will miss working alongside such an inspiring group of teachers.

## ABSTRACT

### DOGMATISM, COPING, AND SPIRITUALITY: PREDICTING MENTAL HEALTH AMONG THE RELIGIOUS AND THE SECULAR

Jonathan T. Moore

October 28, 2013

Religiousness has frequently been found to positively predict numerous types of beneficial mental health variables in previous literature. These results have often been inferred by scholars to mean that secular groups have poorer levels of mental health despite rarely including secular populations in studies. An ideologically diverse sample of 4,667 respondents provided usable data in the current correlational study that measured the relationships between general dogmatism levels, existential belief strength, spiritual coping, spiritual harmony (i.e., the degree to which one lives in accordance with their self-defined values) and six indicators of mental health. The sample was comprised mainly of agnostic, atheist, Buddhist, Christian, Jewish, and spiritual nonreligious participants. Multi-group analyses within structural equation models and multivariate analysis of covariance procedures were used to investigate hypotheses. The data showed that religious and secular adherents had null differences on five of the six mental health indicators. Further, dogmatism, existential belief strength, and spiritual coping levels all had small-sized standardized regression weights that were statistically significant but weakly predictive of mental health levels even when measured at the ideological group level. Spiritual harmony levels were the only statistically significant standardized

regression weight across all groups that was large in magnitude. The implications of the current study suggest that living in accordance with one's spiritual values, regardless of how those values are defined, is strongly characteristic of better mental health.



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## CHAPTER I

### INTRODUCTION AND REVIEW OF THE LITERATURE

Debate regarding the relationship between religion and mental health has endured for decades. Prominent figures of the field of psychology have often weighed in on opposing sides on whether there is a positive association between religious aspects and mental health or a negative relationship between the two. Both Sigmund Freud (1927/1964) and Albert Ellis (1971) articulated that psychopathology co-occurs with religiousness while other pioneers in the field, such as Carl Jung (1933/1947) and Gordon Allport (1950), argued that religion contributed beneficially to one's psychological well-being.

#### **Definitions**

Before proceeding, a clarification of terms will be provided. These definitions are in no way final, and instead are reflective of their consistent usage in psychological research while achieving a respectable, albeit limited, degree of comprehensiveness. Religion is “a system of beliefs in a divine or superhuman power, and practices of worship or other rituals directed towards such a power” (Argyle & Beit-Hallahmi, 1975, p. 1). This definition is used because by regarding religion as a system it implies that religion is a social institution that one can be affiliated with which separates religion somewhat from other terms (e.g., spirituality). Likewise, the term religiousness will be

used to describe one's level of commitment to their religion. Religiousness (i.e., religiosity) is operationalized in the literature a number of ways: attendance of religious services, agreement with religious doctrines, or the frequency that one prays or meditates, among many others.

Secular is an adjective that denotes something as having no religious affiliation. As follows, a secular person refers to one who is nonreligious or one who is indifferent or oblivious to religion (Zuckerman, 2009). Often included in this secular category are those who consider themselves atheists, agnostics, and those who consider themselves spiritual but not religious. Zuckerman defines an atheist as someone who does not believe that God exists or finds the concept of God meaningless or incoherent. While agnostics, according to Zuckerman, commonly take two distinct forms. Agnostics are either unsure/undecided about the existence of God, or they believe that the existence of God is beyond the scope of human comprehension and is a concept that is unknowable.

Health is a value laden term that is understood differently depending on the cultural perspective and the context. In deference to this diversity, the term mental health will be used in a broad sense that includes any psychological characteristic that indicates the degree to which one is experiencing better functioning (e.g., high quality of life), adaptive traits (e.g., resiliency), attributes that would commonly be regarded as advantageous (e.g., positive affect), or the extent that one is not experiencing attributes that impair normal functioning (e.g., depressive symptoms), are maladaptive (e.g., aggressiveness), or would commonly be regarded as unfavorable (e.g., suicidality).

Other pertinent terms will be defined as they are introduced.

## **Where the Debate Stands Now**

The scholarly discourse and associated research regarding the religion and mental health connection has continued in more recent times. Koenig and Larson (2001) supplied a narrative review of the research in the past century and found that religiousness frequently showed a favorable relationship with indicators of mental health, such as lower rates of depression and substance abuse and higher rates of psychological well-being and life satisfaction. Schumaker's (1992) review summarized several studies indicating that higher levels of religiousness are associated with lower levels of pathological symptomology. Schumaker posited that "irreligion" leads to mental health consequences by inhibiting social and cognitive pathways to psychological health. Koenig, McCullough, and Larson (2001), the most comprehensive review of its kind, examined several hundred articles and frequently came across findings that greater religiousness was positively associated with numerous mental health variables: life satisfaction, happiness, positive affect, and/or morale (in 79 out of 100 studies); greater purpose and meaning and life (in 15 out of 16 studies); greater self-esteem (in 16 out of 28 studies); healthier adaptation to bereavement (in 8 out of 17 studies); less loneliness (in 4 out of 10 studies); less depression (in 60 out of 93 studies); less suicidality (in 57 out of 68 studies); less anxiety (in 35 out of 69 studies); less psychosis (in 4 out of 10 studies); and less substance abuse (in 124 out of 136 studies). Bergin (1983) demonstrated via meta-analytic methods that there was a small, positive relationship between religiousness and favorable indicators of mental health. The acceptance of the connection between religion and mental health is becoming so widespread and supported that Sloan and Bagiella (2002) noted that many training programs now include

preparation for integrating spiritual components into clinical work and that insurance companies, notorious for typically reimbursing only beneficial and empirically supported treatments (Ambrose, 1997), are compensating their consumers for spiritual counseling. Given the preponderance of these scholarly positions and empirical evidence, perhaps social scientists have settled the debate that mental health and religion co-occur harmoniously.

However, to accept such a conclusion would be disregarding a noticeably substantial portion of studies, numbering more than a hundred (about 25%) of the aforementioned works reviewed in Koenig et al. (2001), that have found either an absence of a relation or an inverse relation between religion and mental health. While conceivable, it is unlikely that such a large number of studies could find an inverse or absent relationship purely due to methodological or statistical issues such as insufficient statistical power. Resultantly, other explanations exploring the relationships should be investigated. Beit-Hallahmi (2007) supplied a narrative review of the psychological profiles of atheists and concluded that atheists are not necessarily anymore neurotic than religious individuals. Other exceptions to the momentous tide of positive associative findings between religion and mental health have manifested across multiple definitions of mental health. For example, neuroticism and other negativistic traits were indicated in similar magnitudes between differing levels of religiousness (Francis, Pearson, Carter, & Kay, 1981; Sharkey & Malony, 1986). King and Schafer (1992) did not find a relationship between religious experience and perceived stress but found a positive relationship between perceived stress and church attendance. According to Sorenson, Grindstaff, and Turner (1995), depressive symptoms were the least numerous in those

who identified as not at all religious. Maslow (1970) found that those who were classified as self-actualized (i.e., living to their potential) were more likely to be atheists. Hunsberger, Pratt, and Pancer (2001a) found that psychological adjustment (e.g., self-esteem, optimism) was essentially no different between those socialized as nonreligious to those with religious upbringings among adolescents. Breaking from the single time point data collection models, Atchley's (1997) 14 year longitudinal study demonstrated that participants who maintained their religiousness or nonreligiousness across the study shared insignificant differences between each other in regards to their self-rated health, functional health, and morale levels at the conclusion of the study. Overall, a noticeable host of studies have found inverse or absent relations between religiousness among a variety of different mental health variables.

### **Notable Analyses Exploring the Relationship**

The relationship between religion and mental health has revealed complex interrelations with each other when analyzed and defined carefully. Ventis (1995) astutely demonstrated that the way one defines both religious orientation and mental health has important implications for revealing potential associations. Ventis noted that the directionality and strength of the relationship between religious and mental health variables will vary depending on the definitions of the constructs used. Using Allport and Ross's (1967) intrinsic and extrinsic type religious orientations, as well as Batson, Schoenrade and Ventis' (1993) religion-as-quest- orientation, Ventis noted that intrinsic orientations were associated with positive indicators of mental health, such as a self-actualization, appropriate social behavior, and lower rates of worry and guilt, to name a few. Additionally, Ventis' review of the literature found that extrinsic orientations often

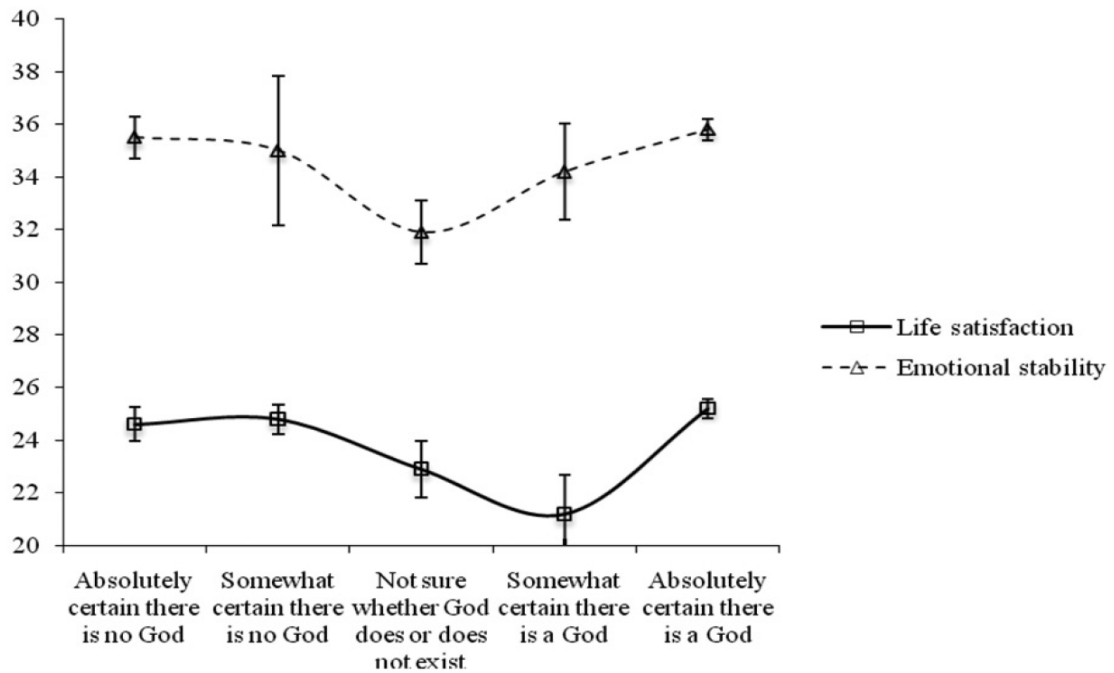
had negative relationships with several of these definitions of mental health while religion-as-quest possessed mixed relationships.

Hackney and Sanders (2003) further confirmed the nuanced relationship between religion and mental health as previously detailed by Ventis (1995). Hackney and Sanders' meta analysis indicated that generally the relationship between religious and mental health constructs produced an overall effect size of  $r = .10$  that was resultant from a heterogenous pool of effect sizes. In other words, the general relationship between religiousness and mental health appeared to be strongly affected by unmeasured influences. In contrast, when the authors used more specific definitions of mental health, namely psychological distress, life satisfaction, and self-actualization, it was found that those who exhibited a religious style of personal devotedness (e.g., strong attachment to God) possessed effect sizes of .11, .14, and .32, respectively. When religious style was defined as an institutional type of religiousness (e.g., attended church), the effects were weaker and sometimes negative in relation to the various constructs of mental health just noted. Specifically, institutional type effect sizes for psychological distress, life satisfaction, and self-actualization were -.03, .10 and .07, respectively. Hackney and Sanders' study noted evidence of heterogeneity of the localized effect sizes for both of the religiousness constructs. This suggested that other moderating influences are involved that may dictate the nature of the relationship between various conceptualizations and definitions of both religiousness and mental health.

### **The Overlooked Curvilinear Relationship and Dogmatism**

In addition to the studies that found statistically nonsignificant differences in mental health between religious and secular participants, other empirical evidence supports a compelling claim that the oft declared “linear” relationship (i.e., as religiousness increases so do mental health levels), as it is sometimes called (e.g., Galen & Kloet, 2010), does not fully capture the complexity of the association between these two variables.

**Curvilinear relationship.** Among studies that have tested for curvilinear effects, evidence for a curvilinear relationship between mental health variables and religiousness/secularity levels have been demonstrated (Bugge, Bister, Nohe, Scheider, & Uhmman, 2000; Diener & Clifton, 2002; Galen & Kloet, 2010; Maselko & Buka, 2008; Riley, 2005; Ross, 1990; Schnittker, 2001; Shaver, Lenauer & Sadd, 1980; Wilkinson & Coleman, 2010). The curvilinear effect suggests that those who are strongly religious or strongly secular (e.g., highly atheistic) are more likely to experience better mental health than agnostics, religious “nones” (i.e., those who identify as having no religious affiliation), skeptics and doubters, and the less religious. Figure 1 provides an example. Studies that have found support for a linear effect have often considered that secular persons can be combined with the less religious (e.g., Pollner, 1989). Thus, the linear model has erroneously implied that secular groups, such as atheists, would experience poorer mental health because they are essentially no different from groups who are not highly religious. This methodological issue will be elaborated on in the appropriate section.



*Figure 1.* An example supporting a curvilinear relationship between theistic/atheistic certainty and indicators of mental health. From “Mental well-being in the religious and non-religious: Evidence for a curvilinear relationship,” by L.W. Galen & J.D. Kloet, 2010, *Mental Health, Religion, & Culture*, p.11. Advance online publication. Copyright 2011, by Taylor & Francis Online. Reprinted with permission.

**Dogmatism.** A commonly used method of quantifying one’s religiousness or secularity is to gauge how strongly one believes in their ideology, or in other words, one’s level of dogmatism. Altemeyer’s (1996) definition of dogmatism referred to it as an unjustified certainty and conviction that is resilient against opposing beliefs. Dogmatism, in this context, differs from constructs like cognitive rigidity in that dogmatism focuses on one’s beliefs about important life issues, while cognitive rigidity is often operationalized as lacking critical thinking or limited creativity in one’s responses in everyday tasks (e.g., Schotte & Clum, 1982). As Ross (1990) demonstrated,



measuring one's strength of beliefs is a key variable to consider, which contradicts the typical scholarly procedure of simply measuring whether those beliefs are religious or not. Ross' study is also notable in that it found the curvilinear effect (i.e., higher levels of belief strength, either religious or secular, both related to greater mental health) across multiple groups, including Protestants, Catholics, Jews, as well as those who identified as having no religion. Similarly, Galen and Kloet (2010) found the same type of curvilinear relationship with mental health when asking participants to clarify their level of certainty that God exists/does not exist (as was illustrated for Figure 1). Buggle et al.'s (2000) methodology was similar in that they also gauged for degrees of religious belief but their methodology slightly differed in that their secular comparison group was made up of highly dogmatic participants who considered themselves "militant" or "determined" atheists. Nonetheless, the same curvilinear relationship was found.

It is important to note that similar to religiousness, there are various degrees of nonreligion or secularity. For example, Whitley (2010) described atheists who simply lack a belief in God as compared to atheists who assertively commit themselves to a disbelief in God. The latter group would qualify as the more dogmatic with their secular worldview.

Not only is the curvilinear relationship being evidenced across multiple conceptualizations of ideological strength or dogmatism, but it is also being corroborated across several different indicators of mental health. The curvilinear effect was seen in general measures of psychological distress or psychiatric symptomology (Ross, 1990; Shaver et al., 1980), emotional stability and life satisfaction (Galen & Kloet, 2010),

lifetime prevalence of a psychiatric disorder (Maselko & Buka, 2008), and depressive symptomology (Bugge et al., 2000, Schnittker, 2001; Wilkinson & Coleman, 2010).

By considering belief strength or higher levels of certainty, regardless of their ideological underpinnings, are arguably the salient factor that accompanies better mental health, studying weaker allegiances and more skeptical belief systems may help increase scholarly understanding of the relationship with mental health effects. Previous research is consistent with weaker allegiance and skeptical belief systems relating to poorer mental health. Lower levels of dogmatism have been predictive of higher anxiety levels (Rokeach, 1960) and more pathological psychological profiles (Richek, Mayo, & Puryear, 1970). Religious doubt has been related to higher levels of depression (Krause & Wulff, 2004), psychological distress (Krause, Ingersoll-Dayton, Ellison, & Wulff, 1999), and lower levels of life satisfaction, self-esteem, and optimism (Krause, 2006). According to Hunsberger, Pratt, and Pancer (2001b) and Puffer et al. (2008), religious doubt may be an indicator that one is experiencing identity moratorium (i.e., seeking an identity but not having strongly committed to any identity status or label). Perhaps the people who are located at the reduced mental health levels portion of the curvilinear relationship are experiencing identity moratorium. In consideration that, in general, experiencing identity moratorium is associated with higher anxiety levels (Broderick & Blewitt, 2010), one would also expect to find lower levels of mental health. There is also initial evidence that fluctuating religiousness levels are associated with having had been diagnosed with Generalized Anxiety Disorder and alcohol abuse/dependence (Maselko & Buka, 2008).

Other research has found that when one's beliefs are successfully challenged and cognitive dissonance is experienced higher levels of negative affect are frequently observed (Burris, Harmon-Jones, & Tarpley, 1997). This finding by Burris et al. (1997) is relevant in that it is conceptually similar to the aforementioned studies that found lower strengths of beliefs predicting negative mental health consequences. It is also relevant for the purpose of the current paper to note that cognitive styles have evidenced a relationship to whether one believes in God both correlationally and experimentally (Shenhav, Rand, & Green, 2011). In light of these findings and the information described by previous theorists (e.g., Beck, 1976), there is evidence for an interrelationship between thinking styles and emotions, which in turn suggests that mental health has an interrelationship with one's cognitions. Thus, investigating the specific relationship between indicators of dogmatism, a cognitive style of its own, and mental health may further scientific understanding of protective factors or buffers against stress.

Unfortunately, when one looks beyond the previously mentioned studies that found a curvilinear effect there is little research on these in-between groups, such as agnostics or religious "nones," because they are often combined with a nonreligious or atheist group within research samples. Agnostics in particular may be undergoing doubt or moratorium experiences, which may partly explain lower levels of mental health because they lack the protective factor that is a dogmatic certainty or an orienting worldview that can buffer forms of stress. This hypothesis is warranted, especially when one considers that one common definition of agnosticism (of several possible definitions) is being unsure or undecided about God's existence (Zuckerman, 2009). Zuckerman's other definition of agnosticism, believing that the existence of God is one matter that is

beyond the scope of human comprehension, suggests that tolerating ambiguity about existential matters may result in negative mental health consequences, if one considers the research demonstrating the curvilinear effect. Altogether, the evidence found thus far suggests that when one's cognitive framework or belief systems are not well solidified that poorer mental health tends to co-occur among populations that are only slightly religious, fluctuating, or unsure.

Several attributes may potentially covary with dogmatism. Richek et al. (1970) found that dogmatism's relationship with mental health varied between genders with health benefits being evidenced in males only. Right wing authoritarianism (RWA), a construct that is convergent with dogmatism and refers to a high degree of submissiveness to leaders and social norms as well as distaste for outsiders, was found to be more pronounced in older adults (Altemeyer, 1996). Altemeyer also reported that RWA is inversely related to education level, but this effect is small. These findings suggest that similar relationship directionalities may hold up when measuring dogmatism specifically.

### **Other Explanations of Mental Health for the Religious and the Secular**

**Spirituality.** Scholars have struggled to define spirituality and resultantly there has been some difficulty identifying what these necessary ingredients of spirituality might be. Gorusch (2002) defined spirituality as “the quest for understanding ourselves in relationship to our view of ultimate reality, and to live in accordance with that understanding” (p.8). Hood, Hill, and Spilka (2009) noted the complexity and confusion of the term spirituality and then vaguely defined it by mentioning several of its features

that distinguish it from religion: spirituality is both personal and subjective, does not require an institutional framework or a deity, and is strongly informed by one's commitment to values. Spirituality is also more psychological while religion is more sociological.

Most of the information presented thus far has conceptualized results in terms of religiousness and nonreligiousness or religious and secular identities (e.g., atheists and agnostics), as the bulk of previous literature has tended to do. Such terminology is confining and it is important to consider conceptual models that can inform future research and further theoretical advances. One such work, Koenig (2008), summarized that historically in the psychology of religion and spirituality literature, religion was considered the supraordinate category while spirituality was considered the subordinate characteristic that was not necessarily shared by all who were religious. The model entailed that religious and/or spiritual traits contribute to mental health. Scholars often made conclusions regarding secularity and mental health's relationship despite rarely including secular samples.

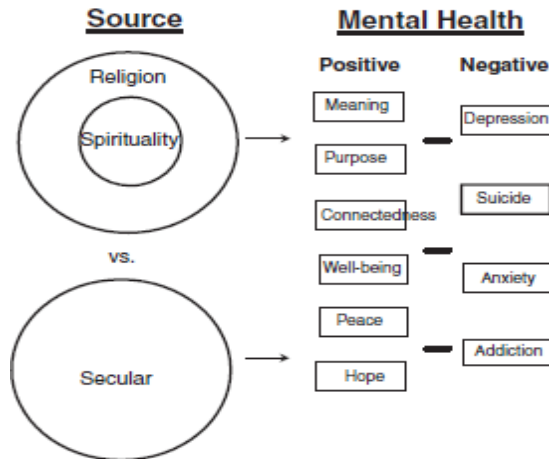
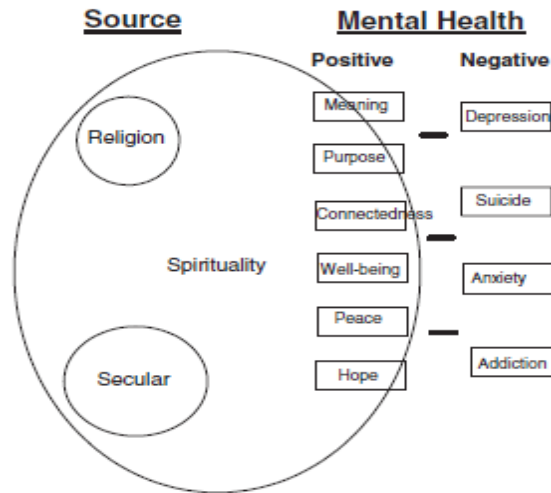


Figure 2. Previous scholarly understanding of the relationship between religion, spirituality, and secularity with mental health. From “Concerns about measuring “spirituality” in research,” by H.G. Koenig, 2008, *Journal of Nervous and Mental Disease*, 196, p. 350. Copyright 2008 by Lippincott Williams & Wilkins. Reprinted with permission.

Koenig (2008) proceeded to discuss that more modern research reflects a different understanding in the way that spirituality and religion are described, as presented in Figure 3. This modernized conceptual model reflects that the literature is now conceptualizing religion as a nonessential subcategory to one’s spirituality, and that secular groups may also be spiritual. The noteworthy element of this conceptualization is that the religion and mental health connection has been found in previous literature not because religion is the essential and active mechanism that is associated with health, but that spirituality possesses the active ingredients that co-occur, even among those who possess secular identities. Hood et al.’s (2009) descriptive features are congruent with

Koenig’s conceptualization that religion is a nonessential, but sometimes co-occurring element of spirituality.



*Figure 3.* Current scholarly depiction of the relationship between religion, spirituality, and secularity with mental health. Note the overlapping conceptualization of spirituality with measures of mental health in the figure. This reflects a methodological shortcoming in the scholarly literature that will be elaborated in a later section of the current paper. From “Concerns about measuring “spirituality” in research,” by H.G. Koenig, 2008, *Journal of Nervous and Mental Disease*, 196, p. 351. Copyright 2008 by Lippincott Williams & Wilkins. Reprinted with permission.

**Components of spirituality.** There are several thematic elements in the complex construct of spirituality that have frequently appeared in various conceptual models of spirituality and in the creation of scales measuring spirituality. Chiu, Emblen, Van Hofwegen, Sawatzky, and Meyerhoff’s (2004) literature search of over 70 qualifying articles found four major themes recurring frequently in the differing conceptualizations

of spirituality espoused by scholars: existential reality; connectedness; transcendence; and power/force/energy. Existential reality refers to a personal journey to discover meaning and purpose in one's life. The connectedness theme reflected relationships with other people communally, the environment, and a higher power. Themes of transcendence typically denoted a capacity to attain new perspectives and experiences that were beyond physical reality. The final theme found by Chiu et al. used terms such as power, force, or energy that represented a fueling motivation or compeller within an individual that was used to make significant life choices and engage in self-discovery.

Fisher's (1998) own review of the spirituality literature not only led to similar thematic elements that reflect the spirituality literature and help define spirituality as a construct, but he also went a step further by creating a theoretical model that addressed how spirituality contributes to one's overall health. His description of spirituality is similar in scope to Chiu et al.'s (2004) findings, with only slight differences that allowed for describing the nature of the spirituality and health connection. Most notably of these, Fisher (1998) argued that his four domains respective to his conceptual model build upon each other in order to instill a holistic level of health, a notion he referred to as "progressive synergism" (p. 28). The initial domain, the personal domain, is a precursor for later spiritual experiences, and it includes aspects such as one's sense of identity, meaningfulness, and purpose in life. Being in this personal state of spiritual fulfillment allows one to beneficially experience deep interpersonal relationships with others and the community, referred to as the communal domain. The environmental domain follows and the individual's constitution incorporates a sense of respect for nature and being a steward for the environment at large. Finally, the transcendental spiritual domain that



follows and is important in achieving a sense of wellness and health is the experiencing of a relationship with a force beyond humanity, which may include a healthy relationship to God, some ultimate concern that one values, or a cosmic power. Fisher stated that the beneficial quality that one experiences in each of these four domains will vary throughout life due to the positive and negative circumstances that humans endure, but one's health is enhanced by the synergism between each of these domains when each are experienced with greater quality. As follows, one will undergo greater health, including mental health, if they value and are able to experience the tenets associated across the four domains of personal, communal, environmental, and transcendental. Spiritual harmony is another facet of Fisher's spiritual health model (Fisher & Brumley, 2006) that has implications for one's well-being. Spiritual harmony is the congruence between one's personal definition of spiritual health and whether they are living up to that standard or not. A person who has spiritual ideals and beliefs but does not live in accordance with those ideals would be in a state of lower spiritual harmony (i.e., spiritual dissonance), and it theoretically follows that the person would experience mental health consequences.

***Evidence for spirituality and mental health connection.*** Not only does the spirituality and mental health connection have a theoretical foundation, numerous studies have established empirical support that multiple facets and conceptualizations of the spirituality construct contribute favorably to one's mental health (Barcus, 1999; Comptom, 2000; Coward, 1991; Fabricatore, Handal, & Fenzel, 2000; Fry, 2000; Genia, 1996; Mofidi et al., 2007; Saxena, 2006; Tsuang et al., 2002; Veach & Chappel, 1992). The theoretical and empirical support coalesce to strongly suggest a positive and perhaps linear association between spirituality and mental health.

When one also considers Koenig's (2008) interpretation of the modern research literature that stated that spirituality is associated with mental health, a compelling argument is born that perhaps the spirituality and mental health relationship is what scholars have been describing all along even when they were using religious identity or religiousness as a variable in previous studies throughout the years. Religiousness may have been acting as a proxy variable. Restated, the last century of research demonstrating that religiousness contributes to one's mental health may have actually been tapping into the spirituality and mental health connection instead which may explain previous findings and the linear nature of those findings. Further, given the preponderance of null findings that evidenced non-statistically significant relationships between religiousness and mental health, such as the ones reviewed by Koenig et al. (2001), it becomes possible the methodologies employed by those studies were more situated to tap into religious elements that excluded components of spirituality, with the spiritual components being the actual essential ingredients responsible in the relationship with mental health. This hypothesis is supported by the fact that, as discussed earlier, intrinsic religiousness (Ventis, 1995) and personal devotion in religiousness (Hackney & Sanders, 2003) show more consistently positive and larger effect sizes with mental health variables than other variables, such as extrinsic religiousness. Of further note, both of these constructs, personal devotion and intrinsic religiousness, are conceptually overlapping with spirituality constructs if one consults the definitions presented by Hood et al. (2009) previously discussed. As stated earlier, constructs such as extrinsic religiousness show weaker effects or more often indicate inverse relationships in regards to their association with mental health (Hackney & Sanders, 2003; Ventis, 1995). Moreover, the extrinsic

religiousness construct is not overlapping and is conceptually different from spirituality constructs. With these implications considered, the more capable a research study can incorporate spirituality constructs the more likely a positive and perhaps even linear association between spirituality and mental health will be evidenced.

*Secular spirituality.* Other research has supported the proposed facets of spirituality in secular populations, such as atheists (Burkhardt, 1994; Stanard, Sandhu, & Painter, 2000), who presumably may derive psychological benefits often found associated with spirituality. Burnard (1988) noted that atheists and agnostics actively searched for meaning in life and Hungelmann, Kenkel-Rossi, Klassen, and Stollenwork (1985) found that atheists and agnostics value interpersonal connectedness with others. Both of those constructs are reflected in the spirituality themes and models of Fisher (1998) and Chiu et al. (2004), but these were indirect findings only suggesting at a secular spirituality.

In contrast to the indirect indication of spirituality described in Burnard's (1988) and Hungelmann et al.'s (1985) questioning of secular populations, Chappel's (1990) more explicit questioning of atheists and agnostics found that many members of these groups consider spirituality to be relevant in their lives. Similarly, O'Connell and Skevington's (2005) study found that Buddhists, Quakers, and Christians, as well as atheists and agnostics, all valued concepts of spiritual strength, meaning in life, and inner peace in similar magnitudes and regarded each facet as important for one's quality of life. As a whole, these studies illustrated that spirituality can operate outside of religion and mirror Koenig's interpretation of the research literature regarding the relationship of spirituality to mental health. Chiu (2000) suggested that cross-cultural examinations could play a role in determining common elements of spirituality. Perhaps examining the

spiritual elements considered by secular cultural groups can help expand on what spirituality means for diverse groups and alleviate some of the scholarly confusion surrounding the construct.

**Coping strategies.** The relation between coping strategies and mental health has received substantial focus in the psychological literature. One consensus that scholars currently accept is that there is no “magic bullet” coping strategy that attenuates stress uniformly in all situations across all types of people (Lazarus & Folkman, 1984). Different coping strategies may be effective or maladaptive for mental health outcomes depending on the context and person. Nonetheless, Aldwin and Revenson (1987) noted that contextually less adaptive coping strategies tend to co-occur with poorer mental health and that coping strategies are sometimes causal explanations for such outcomes. Two main categorizations of coping strategies are emotion focused and problem/action focused coping. Emotion focused coping refers to efforts aimed at modifying one’s reaction to a stressor, whereas problem/action focused coping reflects strategies aimed at modifying the actual cause of one’s stress. One specific type of coping that does not cleanly fit into either of these categories are religious or spiritual coping strategies (Tamres, Janicki, & Hegelson, 2002). Religious and spiritual coping strategies deserve sufficient attention as they are sometimes seen to be the most frequent style of coping used (e.g., Conway, 1985-86) and used by large percentages of samples, sometimes between 80-90% (Ayele, Mulligan, Gheorigu, & Reyes-Ortiz; Koenig & Larson, 2001). With stressful circumstances affecting mental health, and with coping strategies at least partially moderating this relationship, it becomes relevant to investigate the roles of both

secular coping and religious/spiritual coping styles to better understand the overall relationship with mental health.

***Religious and spiritual coping.*** Religious and spiritual coping research has evolved throughout the years. It typically focused on religious aspects in the primary and more spiritual aspects secondarily, if at all. Early literature was limited in that it indirectly argued for religious coping's positive effects by using indicators such as prayer frequency or church attendance to delineate contributions to mental health (e.g., Sherkat & Reed, 1992). Later works discussed religious coping from a somewhat limited problem-solving coping style perspective (e.g., Pargament et al., 1988). Pargament, Koenig, and Perez's (2000) more recent and comprehensive description of religious coping discuss it as having five functions, including some distinctly spiritual aspects, that are derivations from religion's functions and go beyond just problem-solving implications of previous conceptualizations. 1) Religious coping can manifest as a cognitive framework that helps one find meaning, interpret, and understand baffling or stress inducing circumstances (e.g., believing that suffering a catastrophe was not a random act, but done with the purpose so that one would seek a stronger relationship with God in response). 2) Religious coping may include connecting spiritually with other people as well as a divine entity or cosmic force (e.g., praying to God to help others that are in need). 3) Religious coping can include acts or beliefs that provide spiritual comfort by reducing one's apprehension to thrive in a mortal world and also encourage one to connect with a force that is beyond the physical world (e.g., seeking strength or support from God to help get through a difficult task). 4) Religious coping can provide a sense of control over stressful situations (e.g., a victim of theft who finds comfort in the belief

that karma will punish an escaped thief). 5) Religious coping can guide one from living an unfulfilling lifestyle to one that has new spiritual values (e.g., dissatisfaction within a Christian's life that encourages the Christian to live a more Biblically congruent lifestyle). Despite the important contributions to the field, as a whole, the religious coping literature is limited in scope because it emphasizes the more confined notion of religion rather than the more comprehensive aspects that are spirituality. Also, like the coping literature in general, religious coping literature is inherently limited to discussing reactions to stress. To better understand mental health outcomes, emphasizing the roles of protectiveness and resiliency to stress are also important (Benard, 1991).

Religious and spiritual coping strategy research has evidenced favorable outcomes with many mental health variables, such as confidence, self-esteem, tension, and mood, (Pargament et al. 1990); personal growth (Lucero, 2010); boredom, social withdrawal, hopelessness, sadness, and restlessness (Koenig et al., 1995); psychological distress (Pargament et al., 1994); and adjustment to bereavement (McIntosh, Cohen Silver, & Wortman, 1993). The results of Krägeloh, Pei Minn Chai, Shepherd, and Billington (2010) suggested that individuals with lower levels of spirituality and religiousness are more likely to use avoidant and escapist coping strategies that are typically maladaptive for one's mental health while higher levels of spirituality and religiousness were associated with positive indications of health. In this regard, accounting for levels of religiousness and spirituality may be important contextual determinants for dictating the relationship between religious and spiritual coping strategies and mental health. With respect to the general strength of the effect of positive religious coping, Ano and Vasconcelles' (2005) meta-analysis of 49 studies found that it

covariied with healthy psychological adjustment with a medium-strength effect size of  $Zr = .33$ .

Although religious and spiritual coping may be associated with better mental health outcomes, one might question whether the effect of these coping styles are redundant when other beneficial but purely secular coping mechanisms are in the picture. Numerous studies have shown that even though secular coping and religious coping often co-occur, they are not entirely redundant in regards to their relationship with mental health outcomes. When the beneficial effects of secular coping are statistically controlled for, the advantageous effects of religious coping still remain with statistically significant strength for general psychological distress (Pargament et al., 1990), positive affect (Brant & Pargament, 1995, as cited in Pargament, 1997; Pargament et al., 1994), negative affect (Pargament, Smith, & Brant, 1995, as cited in Pargament, 1997) depression (Vandecreek et al., 2004), and anxiety (Vandecreek et al., 1995, as cited in Pargament, 1997).

Religious and spiritual coping may be additively effective beyond secular coping because it gives a sense of control in uncontrollable stressful situations (Siegel, Anderman, & Schrimshaw, 2001). For example, invoking the support of or pleading with a higher power such as God may help alleviate personal distress because it creates the sense that the individual has countered and remedied the previously unalterable stressful problem to some degree by adding a level of control to the situation. This phenomenon is reminiscent of the old adage “there are no atheists in foxholes.” While secular coping mechanisms may be slightly more limited in usefulness in certain situations, religious and spiritual coping mechanisms may be perceived as unlimited in power by their users who believe in omnipotent sacred entities (Lucero, 2010). Perhaps religious and spiritual

coping have an attractive benefit that purely secular coping cannot match, at least not entirely.

The relationship becomes less clear when one considers a smaller, but noteworthy group of studies. Cederblad, Dahlin, Hagnell, and Hansson (1995) found that secular coping mechanisms were responsible for better mental health, better quality of life, less psychopathology, and less alcoholism while religious coping mechanisms were virtually not endorsed and nonessential for one's better health. This study suggested that secular coping can be advantageous and does not necessarily co-occur with religious coping despite religious coping sometimes demonstrating as the most popular method of coping (Conway, 1985-86). Elsewhere, no mental health differences were found between secular and religious groups despite the religious participants showing a substantially large effect ( $\eta^2 = .68$ ) regarding their use of religious coping (Horning, Davis, Stirrat, and Cornwell, 2011). Horning et al. is perhaps the only study of its kind that directly investigated religious and secular coping styles that actually included secular comparison groups. The authors found very few differences between atheists, agnostics, high religiousness persons, and low religiousness persons. There was a finding that atheists in particular, when compared to agnostics and religious participants, evidenced a small-sized effect of being more likely to abuse substances to cope, but this effect did not achieve statistical significance. Overall, the study found similar rates of secular coping styles, both adaptive and maladaptive, between religious and secular groups.

The relationship of religious coping with mental health also becomes slightly muddied by the findings that religious coping is not always a healthy act. Pargament et al. (1998) showed that certain religious coping styles, such as becoming angry with God



or feeling punished by God, were associated with poorer mental health. Koenig, Pargament, and Nielsen (1998) echoed these same findings that negative religious coping styles were associated with poorer mental health, but the authors also found that most negative religious coping behaviors were used rather infrequently. In general, though, religious coping shares an advantageous relationship with one's mental health.

Although a review of spiritual coping and not a study on its own, Baldacchino and Draper (2001) concluded that religious or secular identities were less relevant for determining one's ability to cope but that maintaining a positive outlook was the crucial factor across people. Wilkinson and Coleman (2010) found that strong ideological beliefs helped participants cope effectively through providing consolation and guidance regardless of whether those beliefs were religious or atheistic in nature. One might wonder how an ideology like atheism that is essentially doctrine-less would help provide consolation and guidance. As one 89 year old atheist participant in Wilkinson and Coleman's study stated, "[...] what we've got here is the here and now. Just make the best of it, do what we can and live peacefully with everybody that's prepared to live peacefully with us." (p. 350). Coincidentally, one could argue that this atheist's statement shares striking similarities to the basis of many religious faiths. Other research has found that atheists and agnostics resembled their religious counterparts and had developed a code to live by that matched their own philosophical outlooks (O'Connell & Skevington, 2005). A comprehensive look at this evidence suggests that distinguishing between religious or secular identities in isolation does not fully capture the phenomenon, as other factors, perhaps more cognitive in nature (e.g., ideological strength, attribution styles), are at play that are actively associated with mental health benefits and deficits.

*Religious and spiritual coping covariates.* Previous literature has found several attributes that tend to covary with religious and spiritual coping. Women, older adults, and those with lower income tend to derive greater benefits from religious and spiritual coping than their respective counterparts (Pargament et al., 1990). In regards to race/ethnic status, studies have indicated greater endorsements of religious and spiritual coping among African Americans in particular (e.g., Steffen, Hinderliter, Blumenthal, & Sherwood, 2001). In contrast, the only demographic characteristic Pargament et al. (2000) found that accounted for a statistically significant amount of variance regarding whether one further benefitted from religious/spiritual coping or not was identifying as female.

Religious and spiritual coping strategies have not been directly compared with measures of dogmatism; however, some studies have examined religious fundamentalism, a specifically religious form of dogmatism, in conjunction with religious/spiritual coping. Unfortunately for interpretive considerations, religious fundamentalism's relationship with religious/spiritual coping is not clear cut. For instance, Raiya, Pargament, Mahoney, and Trevino (2008) found that religious fundamentalism was moderately related to multiple forms of negative religious/spiritual coping styles ( $r = .39$  to  $.42$ ) but substantially less related ( $r = .11$ ) to an indicator of positive religious/spiritual coping. This particular finding is difficult to make sense of when previous research has found that both stronger belief systems and positive religious/spiritual coping are related to better mental health. Based on previous findings, one would expect the Raiya et al. study to reveal a larger and positive correlation between fundamentalism and positive religious/spiritual coping with an inverse correlation

between religious fundamentalism and negative religious/spiritual coping. In a separate study, participants considered to be religious fundamentalists were twice as likely to endorse positive religious/spiritual coping behaviors than negative ones (Nooney & Woodrum, 2002). Further research exploring this relationship is warranted given the mixed observations.

### **Dogmatism, Spirituality, and Coping: Methods of Emotional Regulation**

Dogmatism, spirituality, and coping are the constructs of interest for this study for two reasons. First, within the field of psychology of religion and spirituality, these variables' relationships to mental health are the most widely studied. More importantly, these three variables can be understood from a single, but comprehensive theoretical framework: emotional regulation.

Gross (2008) defined emotional regulation by describing the processes one uses to modify emotional states. Typically the literature describes processes that are intrinsic in nature (i.e., what a person does to impact their own emotional state). Emotional regulation also frequently refers to processes that are aimed at attenuating one's own negative emotions, such as anger or sadness (Gross, Richards, & John, 2006). Conversely, emotional regulation can also take the form of maintaining or magnifying one's positive emotions (Langston, 1994), such as joy or tranquility, but this appears less often. In general, processes can take many forms, such as cognitive or behavioral strategies to modify one's emotional state. Cognitively, one might modify their disappointment after failing a test by mentally focusing on their positive qualities, assuring themselves that the test performance was a fluke, or converting the sadness to

anger by silently lambasting the professor's actions (e.g., "The test questions were poorly worded!"). In either example the participant was employing cognitive strategies to create a more preferable emotional experience, be that a more soothed state or as the latter example showcased, one negative emotion being endorsed because it was preferable to another emotion.

Behaviorally, one can also regulate and impact one's emotions. Receiving a coveted college acceptance letter in the mail may implore a high school senior to prolong their excitement by telling friends and family the good news who will then share and reciprocate the happiness, perhaps making the emotional high endure longer and with greater intensity within the student. Bitterness within a recent divorcee may prompt an ex-husband to sue for full legal custody of the couple's children as an attempt of turning the bitterness into a vengeful sense of triumph over his former wife. While these examples consist of major events in one's life, emotional regulation can more often be seen on a smaller scale in everyday life. Examples include making small talk in an elevator to ease the awkwardness with another person, honking at the car in front of you that is reacting slowly to a changed traffic light as a means to ease an angry tension, or kissing one's spouse upon returning home after a workday apart to quickly experience feelings of love and intimacy.

Emotional regulation can also be expanded to understand other major life choices beyond reactions to major stressors, everyday hassles, and everyday pleasantries. One could argue that people make decisions, getting married, for example, because they expect some emotional reward, such as the enjoyment of shared intimacy or perhaps the sense of contentment derived from attaining the better financial security that marital

partnership can create. In the same vein, why would a young graduate choose a career in one profession over another? Arguably because the graduate had a belief that one of those professions would provide more net pleasure because it would result in more positive emotions and less negative emotions than the alternative career choice. These examples are given because these same principles can apply to why one would adopt or maintain (perhaps subconsciously) a religious, spiritual, or secular identity. Each of these identities provide an orienting worldview that can help one navigate the complexities of life via the respective identity's inherent thinking styles and expected behaviors which impact emotional outcomes. Religious doctrine guides how one should strive to think and act, and as described earlier, secular persons adopt their own philosophical outlook as a guide.

Finally, it is important to note that emotional regulation also affects one's mental health. Gross (2008) noted that maladaptive emotional responses are characteristic of more than half of Axis I disorders and all of the listed Axis II personality disorders listed in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000). This finding holds that one's quality of emotional regulation strategies affects facets of mental health, such as depressive symptomology or life satisfaction.

These general principles of emotional regulation can be applied to understand the roles of cognitive beliefs, like dogmatism, as well as the role of coping strategies and spirituality. Each of these variables represent constructs that help one regulate their emotions and resultantly affect mental health.

**Coping.** Coping strategies have an obvious fit with emotional regulation, because, by definition, coping strategies are a response to a stressor. Typically coping is defined as a response to a negative event and coping strategies are aimed at combating distress or regaining positive affect. Coping strategies, then, primarily exclude facets of emotion regulation theories that describe how one increases or maintains positive emotions but are nonetheless clear indications of emotional regulation processes.

**Dogmatism.** As defined earlier, dogmatism represents a certainty or strength of one's beliefs. It follows that one who is more certain in their belief style is more resistant to threats from situations or opposing worldviews that threaten the credibility of one's own belief. Higher levels of dogmatism may help buffer individuals from stress and reduce the occurrence of negative affect due to experiences like cognitive dissonance (Burriss et al., 1997). A person who chooses to strongly believe in their ideology may be effectively emotionally regulating and be less likely to experience psychological distress. This hypothesis is supported by the previous research discussed that found evidence for a curvilinear effect between strongly believing religious and secular groups with wavering belief systems being at a disadvantage.

One distinction regarding terminology that is important to note is theistic/atheistic certainty versus dogmatism. Previous research that found support for a curvilinear effect with mental health (e.g., Galen & Kloet, 2010) demonstrated that one's level of certainty in God's existence or nonexistence produced a curvilinear relationship, while other studies demonstrated the same curvilinear effect by analyzing dogmatic strength levels. Methods of clarifying dogmatic strength levels varied across studies. For example, Riley (2005) measured participants' levels of certainty about general existential issues while

Ross (1990) had participants state their religious or secular identity and then rate that identity as being strong, somewhat strong, or not very strong. Theistic/atheistic certainty can be considered a subtype of dogmatism specifically regarding God's existence/nonexistence; however, dogmatism in its general form, is a broad characteristic that denotes the extent to which one is certain about their beliefs in general, regardless as to whether those beliefs deal with issues of theism, atheism, or something else entirely (e.g., political ideals). It is this general form of dogmatism that theoretically contributes to resiliency against stress and thus may relate to better emotional regulation and healthier mental states; yet, no study to date has investigated whether dogmatism actually mediates the relationship between theistic/atheistic certainty and mental health.

**Spirituality.** Spirituality has been linked with emotional regulation theories in the past, such as self-control theory (e.g., Ciarrocchi & Brelsford, 2009) and psychodynamic frameworks (e.g., Gostecnik, Repic, Cvetek, & Cvetek, 2009). Another applicable emotional regulation perspective, terror management theory (TMT; Greenberg, Solomon, & Pyszczynski, 1986), posits that humans are aware of their mortality and act or think in ways to compensate with their inevitable deaths. TMT was formulated in part to explain existential belief patterns and behaviors and is unique when compared to other emotion regulation theories because its constitution provides a detailed interpretive lens for the functional roles that religion and spirituality play in one's life. According to Vail et al. (2010), TMT states that religious and spiritual beliefs and actions provide one with a psychological security from the terrifying realism that death awaits us all. As follows, spirituality and religiousness can be viewed as methods of emotionally

regulating and in turn may affect one's mental health depending on the extent of their endorsement.

Both religious and spiritual ideologies beneficially regulate one's negative emotions regarding death by providing what TMT theorists refer to as literal and symbolic immortality (Dechesne et al., 2003). Religious perspectives often provide literal immortality by essentially saying, "follow this doctrine and you will live for eternity." Symbolic immortality refers to living on by being a part of something that is larger, important, and lasting beyond a single human's lifespan. This may be achieved through an ethnic or nationalistic identity that will endure among a group of people even after individual members perish but generations of living members persevere. Symbolic immortality can also be achieved through the common tenets of spirituality. Reflective of the Chiu et al. (2004) and Fisher (1998) spiritual models discussed earlier, spirituality involves a sense of connectedness or community that transcends the individual and lives on. Spirituality, which may or may not include religiousness, can thus provide the adaptive emotional benefits of literal and/or symbolic immortality, which in turn may explain mental health differences among individuals. Those who are in a state of spiritual fulfillment may experience better mental health outcomes, congruent with the spirituality and mental health empirical findings discussed previously. Even secular forms of spirituality are likely to provide emotional regulation benefits because the secular person's attunement with their spiritual motives of searching for meaning and purpose in life, living symbiotically with nature, and experiencing a deep connectedness and bond with humanity (along with many other forms of nonreligious spirituality) would likely positively affect one's emotional valence. Fulfillment of such spiritual motives



would reflect a secular person's drive for symbolic immortality because these ventures are potentially impactful beyond the scope of the singular person's life.

Spirituality differentiates itself as an emotional regulation agent from coping strategies in that spirituality can act as a remedy for negative emotions (similar to coping strategies) or as a maintainer/increaser of positive emotions (relatively an overlooked notion in the literature regarding coping strategies). An example of the former includes being terminated from one's job and responding by going on a hike in nature to experience the splendor and majesty of the environment that is spiritually revitalizing. An example of the latter is experiencing the blessing that is childbirth and giving thanks via prayer to a higher power or God for being bestowed with such a gift allowing one to bask even further in the delight.

### **Methodological Issues and Considerations for Studying Religiousness and Spirituality**

**Sampling.** Hwang et al. (2009) discuss that it is a methodological weakness to not include secular control samples. Producing research that compares high religiousness participants with lower religiousness participants is not the same as comparing a religious group with a secular group on mental health outcomes. As an analogy, take the work of Gamst et al. (2002). The authors found that low Latino ethnic identity levels among Latino Americans were related to poorer mental health. Should one infer from this study that Caucasian Americans or Asian Americans conversely have lower mental health due to the likelihood of them also having low Latino identity levels? That would be an inaccurate overextension of the findings because Caucasian Americans or Asian

Americans have their own respective identities that may also be independently associated with mental health. Likewise, secular identities should be considered separately from religious identities as they represent a different cultural group.

Another sampling issue inherent in the previous research that hampers the interpretation of the relationship between mental health and religiousness/spirituality is that this literature typically reflects Christian research samples. Hood et al. (2009) reported that much of the psychological study of religion/spirituality is limited to those who identify as Christian. Thus, the external validity is once again questionable and the proposed relationships extant within the literature should be considered with skepticism. It is possible that the relationships are limited to Christians themselves or that Christian practices in particular are responsible for the mental health associations observed thus far in the literature. Such findings may or may not be robust when investigated with other religious groups. Much can be learned by studying other groups with differing practices and belief systems, such as other religions or secular groups.

Hall, Koenig, and Meador (2008) went so far as to call secularity a “health liability” despite evidence that supports the contrary. The authors also implied that secular persons and low religiousness persons are a fairly homogenous group. Hall et al. have overlooked two things. First, they have disregarded the implications of studies that were methodologically rigorous enough to use an adequate comparison sample of secular groups that found the curvilinear relationship detailed previously in this paper. Moreover, the authors failed to recognize that heterogeneity exists between secular groups and the less religious. Hwang and colleagues (2009) noted this heterogeneity and criticized religion and mental health research for lumping together secular groups with

the less religious when analyzing data. The characteristics of these less religious sample groups are typically ill defined and their characteristics are poorly measured (e.g., calling them religious “nones” or religious independents), and by comparing them to the highly religious is problematic because it does not provide a meaningful basis for comparison (Hwang et al., 2009). The case for the heterogeneity of secularity in particular is supported by previous research, such as Hadaway (1989), whose cluster analysis revealed five differing groups within a sample of apostates who varied in socioeconomic status indicators, age, political values, family values, and, most notable for the current study, mental health and existential beliefs. Future research should use indicators that allow for an observance of diversity within religious and secular groups in order to more accurately investigate the relationship with mental health variables.

**Challenges measuring spirituality.** Another glaring issue that has pronounced itself in the last two decades concerns the studies that have compared spirituality with mental health variables. Given spirituality’s idiosyncratic nature, finding a single measure whose definition encompasses a diversity of populations is difficult, and is perhaps part of the reason why scholars have argued that there is an oversupply of spirituality scales in the field (Kapusinski & Masters, 2010). While several scales are promising, numerous problems exist in many spirituality scale compositions that have been used in mental health research. Western scholars often create scales that are particularly suited for Christian samples. The Daily Spiritual Experience Scale (Underwood & Teresi, 2002), for example, frequently refers to “God” in its items, and thus may not be situated to measure spirituality levels in nontheistic spiritual persons. Another aspect that is debated by scholars is whether spirituality measures that include

the term spirituality should provide a definition of spirituality for the completers. For example, the Beliefs and Values Scale (King et al., 2006) aims to measure degree of spiritual beliefs and includes such items as “I am a spiritual person” and “At least once in my life, I have had an intense spiritual experience.” What nature of spirituality these items are actually tapping across individuals is not obvious. Echoing the construct validity concerns of Hwang et al. (2009), not clearly providing definitions of spirituality after using the term spirituality in an item makes it difficult to conclude that the researchers measured the same construct in participant A as they did with participant B even though their responses were identical. In contrast, it can be argued that spirituality is idiosyncratic by nature, and by keeping the definition ambiguous the completer can make their own personally relevant interpretations regarding spiritual aspects in item content which may also be useful for researchers to study spirituality’s interrelationships with other variables.

Despite these debatable properties among scales, the salient issue that merits focus is that numerous spirituality scales being used overlap as measures of well-being. The most popular spiritual well-being scale, the Spiritual Well-being Scale (Paloutzian & Ellison, 1982), aims to measure existential and religious well-being. Items include statements like “I feel that life is a positive experience” and “I feel very fulfilled and satisfied with life.” As Koenig (2008) implied, these items could have just as easily ended up on questionnaires aiming to measure general psychological well-being and could be representative of a construct completely independent of spirituality. Even after using a strict inclusion criteria for their review, de Jager Meezenbroeck et al. (2010) found that about half of the spirituality measures they collected contained items that

overlapped with psychological well-being. These shortcomings in measuring spirituality taint the validity of previous researchers' conclusions that spirituality is associated with mental health. For the relationship with mental health to be accurately investigated, one must use a spirituality measure that is distinct from well-being and simultaneously able to encompass diverse groups.

**Covariates.** There are other methodological factors that add to the complexity of investigating religiousness/spirituality and secularity's relationships with mental health and merit discussion. Covariates that may, in varying degrees, partly explain effects on mental health have also been given attention in the literature. To regard the relationship between religion and mental health as a clear cut, linear connection would be an oversimplification as other influences may be present. Koenig and Larson (2001) found that 90% of patients reported they used religion to cope with stress but a similar sample hailing from another geographic location found that only 55% of their patients responded with this same coping style (Ringdal, 1996). Gee and Veevers (1990) discovered with their sample that the positive relationship between religious involvement and life satisfaction weakened or even reversed when geographic location was considered. Females, African Americans, and elderly persons in general tend to value religion more highly when compared to their cultural counterparts (Newport, 2006). Further, these cultural attributes may alter the relationship between mental health and religiousness/spirituality. For example, Crawford, Handal, and Weiner (1989) found that religiousness among females, but not for males, was positively related to life satisfaction and lower psychological distress. Mirola (1999) echoed similar findings by demonstrating that religious involvement was negatively related to depression for females

but no such relationship was found for males. Ellison (1991) found that life satisfaction was related to higher levels of certainty in one's religious faith and this relationship was stronger among individuals with less formal education. Overall, numerous cultural and social factors may partially filter the relationship between religiousness and mental health, and in turn these factors may affect the type of relationship that spirituality shares with mental health when one considers religiousness as a subcategory of spirituality.

Another covariate that must be parsed out to more fully clarify the relationship between mental health and religiousness/spirituality is the role of social support. Greater levels of social support have been shown to associate with higher levels of mental health (Fiori & Denckla, 2012). Additionally, it has been posited that associating with a religious group creates an environment where one is socially supported (Oman & Reed, 1998). Restated, associating regularly with a supportive group of people may serve as a protective factor against stressful or traumatic events, which may, in part, explain one's mental health levels on its own. Such findings add importance to distinguishing whether a positive effect on mental health exists specifically due to religious aspects or due to the beneficial nature of social support in general.

**Unstudied interrelationships.** A final opportunity for exploration that has not yet been investigated thoroughly is the relative strength of effects with mental health among spirituality, coping styles, and dogmatism. The research described thus far most often highlights just one of these variables' relationship with mental health. In contrast, simultaneous inclusion of all these variables in a statistical analysis can help pinpoint both the overlap and the unique effects that each of these variables may share with mental health. It is possible that these variables may possess salient relationships in a univariate

context but this relationship may disappear when the variance of other variables is considered. Simultaneously, a multivariate analysis could illustrate the size of the effects of these variables and clarify whether these effects possess strengths that are still relevant when other variables are also in consideration.

Taken together, the relationship between mental health and religion/spirituality is highly nuanced. The manner in which mental health, religiousness, and spirituality are defined, as well as considerations regarding sample makeup, cultural factors, analytical strategies, and known covariates may also affect how relationships manifest, if at all. Research exploring these intricate phenomena would benefit from considering these issues in order to expand on the current scholarly discourse.

### **The Current Study**

Participants identifying as religious and secular were compared to investigate relationships between the variables of interest; namely, mental health, dogmatism, theistic/atheistic certainty, spiritual harmony, and religious/spiritual coping. Mental health in the following hypotheses refers to the variables of positive affect, negative affect, life satisfaction, hope, gratitude, and altruism. In testing the relationship between one's belief strength with mental health, it was hypothesized that greater levels of theistic/atheistic certainty, regardless of the theistic or atheistic leaning, would positively predict levels of mental health (Hypothesis 1a). Additionally, the participants with the strongest levels of theistic-oriented certainty and atheistic-oriented certainty (as denoted by the first item of this variable's scale), would have similar levels of mental health (Hypothesis 1b). Dogmatism was also hypothesized to mediate the relationship between

one's theistic/atheistic certainty and mental health after controlling for educational level, gender, social support, and self-presentation bias (Hypothesis 1c). Religious and spiritual coping styles were expected to account for significant amounts of the variance in mental health, with higher endorsements of religious and spiritual coping styles predicting greater mental health levels, for both participants who self-identify as religious (Hypothesis 2a) and secular (Hypothesis 2b) when controlling for the influences of gender, race/ethnicity, age, income level, geographic location, social support, and self-presentation bias. Spiritual harmony was hypothesized to account for significant amounts of the variance in mental health, with greater values of spiritual harmony predicting better mental health among both the religious participants (Hypothesis 3a) and those who identified as secular (Hypothesis 3b) after controlling for social support and self-presentation bias.

It is important to clarify that Hypotheses 1a, 1b, and 1c used the theistic/atheistic certainty levels to clarify the strength and nature of one's beliefs, while Hypotheses 2a, 2b, 3a, and 3b, used each participant's self-identified ideological affiliation that may be secular or religious in nature (e.g., agnosticism, Islam, etc.). This distinction is necessary because the first set of hypotheses focused on strength of beliefs specifically while the second and third set of hypotheses investigated relationships via one's self-ascribed religious or secular identity. Also, this allowed for better interpretive possibilities because it separated belief strength from identity status. For example, one could indicate high levels of theism on the theistic/atheistic certainty measure, but they may not be religious (e.g., people who identify as spiritual but not religious). While there may have been overlaps between being theistic and also being religious, using the variables



separately allowed for more accurate testing of the hypotheses and prevented overextensions of the findings.

An exploratory research question with no formal hypothesis was also investigated. What variables (i.e., dogmatism, theistic/atheistic certainty, religious/spiritual coping, or spiritual harmony) constitute the strongest and weakest predictors of mental health among participants, was also investigated. While these variables have been studied separately regarding their relationship to mental health, no study had analyzed them simultaneously in a multivariate context to determine the relative strengths of their effects.

## CHAPTER II

### METHODS

#### **Sample**

An online sample was recruited via contacting various special groups through community forums such as Facebook.com and Reddit.com. Facebook group pages that were invited to participate included group pages devoted to agnosticism, atheism, Christianity, Islam, Judaism, and spirituality. Group memberships ranged from 6,000 to 30,000. Reddit subforums receive random internet traffic, but each forum also has subscribers. The subforums for agnosticism, atheism, Christianity, Islam, Judaism and spirituality were invited to participate and each subforum ranges from 1,500 to over one million subscribers. A “snowball” component was also used so that these initial participants were encouraged to send the survey link to others they felt appropriate. Gosling, Vazire, Srivastave, & John (2004) found that online completion of self-report measures can produce consistent results with en vivo presentations and are apt at acquiring diverse sample memberships which helps ensure greater external validity.

#### **Measures**

**Theistic/Atheistic certainty.** Participants were asked to indicate how certain they were regarding God’s existence or nonexistence. Strong theism is represented by those who endorse the statement “Absolutely certain God exists” (score of 3).

Subsequent possible responses were “Mostly certain God exists” (2), “Somewhat certain God exists” (1), “God’s existence or nonexistence is unknowable” (0), “I am unsure about whether God exists or not” (0), “Somewhat certain God does not exist” (-1) “Mostly certain God does not exist” (-2) and “Absolutely certain God does not exist” (-3). Dawkins (2006) theorized a similar metric, and Galen and Kloet (2010) also used a similar metric in their empirical study with analogous research questions to the current study. One difference of the current theistic/atheistic certainty metric with Galen and Kloet’s is the inclusion of the option “God’s existence or nonexistence is unknowable” because this response reflects an additional type and definition that encompasses agnostic beliefs (Zuckerman, 2009) that is distinctive from those who are agnostic because they are doubtful.

This metric needed to serve as both a categorical indicator (i.e., are beliefs theistic, atheistic, or agnostic in nature) and as a continuous variable of belief certainty. To expand the theistic/atheistic certainty variable into a continuous form to study its linear relationship with other variables more clearly, three items were added. Measurements of the responses to the initial prompt “Regarding God’s existence OR nonexistence: 2) my beliefs are correct and represent truth; 3) I consider my beliefs to be strong; 4) there is nothing that could convince me differently” were gathered. Agreement with these statements was indicated via an 8-point likert scale. In sum, item 1 of the theistic/atheistic certainty scale assessed for both certainty levels (via the absolute value of the response score) and the ideological leaning, while items 2, 3, and 4 assessed for certainty levels only. To create a composite scale with equally weighted items, the 0 to 3

absolute values of the first item were converted to an 8-point likert metric using the transformation procedure outlined by Dawes (2008).

**Dogmatism.** Altemeyer's (1996) DOG scale was used to measure dogmatism and is defined to measure "unchangeable, unjustified certainty" about the correctness of one's beliefs regarding important general life matters. There are 20 item responses reported in a 9-point Likert format. An example item is "I am so sure I am right about the important things in life, there is no evidence that could convince me otherwise." Altemeyer (1996) found that the scale had a Cronbach's  $\alpha$  of .90. The scale's strong predictive and construct validities have also been demonstrated in several studies (Altemeyer, 2002; Crowson, 2009; Crowson, DeBacker, & Davis, 2007).

**Religious/Spiritual coping use.** Religious/spiritual coping use was measured by the religious/spirituality subscale from the Brief COPE (Carver, 1997), an abbreviated version of the COPE Inventory (Carver, Scheier, & Weintraub, 1989). The 2 items consisted of statements asking participants to rate how frequently they enact certain religious/spiritual coping styles to deal with negative events via 4-point Likert response options. A sample item includes "I try to find comfort in my religious or spiritual beliefs." The Brief COPE is frequently used in the coping literature and has also been used with a similar sample of secular and religious participants (Horning et al., 2011). Horning et al.'s study found  $\alpha$  coefficients of .92 for this subscale.

Due to the brevity of the Brief COPE subscale, an additional subscale was used to increase the encapsulation of religious and spiritual coping styles and better understand their interrelationships with other variables. Two of three items from the spiritual

connection subscale of the long form version of the Brief RCOPE (Pargament, 1999) were also used. The third item of this subscale was excluded because it specifically uses the term “God” and thus would not be fitting for all participants. The Brief RCOPE also uses a 4-point Likert response option that has participants rate the frequency they use a coping style. A sample item includes “Thought about how my life is part of a larger spiritual force.” Pargament et al. (2000) found that the three item version of the scale had an  $\alpha$  coefficient of .81.

**Spiritual harmony.** The Spiritual Health And Life Orientation Measure (SHALOM; Fisher, 2010) asks participants to rate 20 5-point Likert items twice each in response to two general questions (totaling 40 responses) that allow for a calculation of one’s spiritual harmony levels. The first general question asks participants to rate whether each of the 20 items’ content (e.g., “Developing a personal relationship with the Divine/God”) is important for one’s spiritual health and the second general question asks the participant the extent that item’s content is actually being experienced by the participant. This latter question regarding one’s lived experience comprises a separate scale has undergone research under the name of the Spiritual Well-Being Questionnaire (SWBQ; Gomez & Fisher, 2003). The SHALOM measure (both general questions included) and SWBQ measure (lived experience question only) are directly based off Fisher’s (1998) spiritual health model and their 20 items reflect Fisher’s four domains of personal, communal, environmental, and transcendental spiritual health (five items per domain). The SHALOM, used for the current study, is arguably more suitable for diverse populations when compared to other spirituality scales because its dual response system allows a person to essentially define their idea of spiritual health by rating whether they

agree that an item's content is important for spiritual health and then rate how well they live up to their own standard of spiritual health. Thereby the idiosyncrasies of each person are accounted for and issues such as the use of religious terminology (e.g., "God") are bypassed because participants are not forced to endorse or disregard what they do not believe exists or is not pertinent. A discrepancy score can then be calculated that reflects the disparity between one's ideal state of spiritual health and their reported lived experience of spirituality (meaning a score of zero represents the highest level of spiritual harmony). Thus, spiritual harmony is measured inversely, but for the purposes of this study the data was transformed with reverse coding to make the statistics more easily interpretable. Fisher and Brumley (2006) suggested that a mean difference of 1.0 or greater between lived experience and spiritual health ideals for a given domain represents spiritual dissonance or lower spiritual harmony. Restated, high levels of spiritual harmony mean the participants' responses for each item were strongly similar between what they believe to be ideal for one's spiritual health and whether they lived in accordance with that ideal.

The predecessor of the SHALOM measure that possesses identical content items, the SWBQ, has evidenced strong internal consistency ( $\alpha = .92$ ), construct validity, convergent validity with other spirituality scales ( $r = .49$ ), and a theoretically consistent factor structure (Gomez & Fisher, 2003). Item response theory analyses have also yielded mostly favorable results but have isolated a select few items that would benefit from further improvement (Gomez & Fisher, 2005). In a content review of several notable spirituality measures, including the Spiritual Transcendence Scale (Piedmont, 1999) and the Spirituality Assessment Scale (Howden, 1992), de Jager Meezenbroek et

al. (2010) stated, “If one were to apply all our criteria, the Spiritual Well-being Questionnaire (SWBQ) of Gomez and Fisher (2003) proves most promising” (p. 14). Regarding the fulfillment of de Jager Meezenbroek et al.’s criteria, they elaborated that the SWBQ was suitable for religiously diverse populations because it does not exclude people based on their religious or nonreligious identity. The authors also detailed that the SWBQ, despite its misleading name, only has one item that conceptually overlaps with a psychological well-being construct (“Developing joy in life”) which also means that the SHALOM measure as a whole is better equipped to tap into a spirituality construct that is largely distinct from psychological well-being.

A modification to this scale was made for the current study so that participants could respond with “Not Applicable.” This change was necessary because no applicability is a meaningfully different response type than the current low anchor on the scale, “Very Low.” This allowed for participants to differentiate whether the item’s content was actually reflective of their beliefs and actions and to what degree it was reflective. It is also important to note that in the slightly infrequent case that a participant marked a spiritual ideal item lower than its correspondent lived experience item the discrepancy score was converted to 0 (to reflect that the person was actually still experiencing an optimal level of spiritual harmony for that item pair). This was done to treat spiritual ideals as a threshold that one meets, and surpassing that threshold does not have negative consequences for one’s spiritual health, unlike falling short of meeting one’s spiritual ideal threshold, which would theoretically relate to negative consequences for one’s spiritual health. Finally, minor modifications to the wording of the scale’s items and directions were made to uphold the intent of the original pencil and paper

format of the scale (the pencil and paper format used a side by side column format for the ideal and experiential corresponding items, which could not be replicated on the survey website). The conversion from the physical format to the electronic survey format required that items be converted to complete sentences to make each item more readable and understandable to respondents.

**Mental health.** Six scales were used to tap into multiple areas assessing mental health. The Positive And Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a common measure used in psychological research to measure mood over a researcher's chosen time frame (e.g., the past week, the past year). The time frame chosen for the current study asked participants to rate their affect in the last month in order to capture an additional time frame separate from the other mental health measures used in the current study. The PANAS is comprised of two scales of 10 words each that relate to either positive or negative affect and are endorsed on a 5-point Likert scale. Watson et al. found Cronbach's  $\alpha$  coefficients ranging from .84 to .88 across each scale for the multiple timeframes posed. Expected convergent and discriminant validity directionalities with related mental health measures, such as the Beck Depression Inventory (BDI) were also found. The BDI demonstrated a correlation of  $r=.58$  with the negative affect scale and  $r=-.36$  with the positive affect scale.

The Gratitude Questionnaire-6 (GQ-6; McCullough, Emmons, & Tsang, 2002) was used to measure one's dispositional gratitude levels. Six 7-point Likert style items ask participants to indicate the extent of their agreement with statements about one's level of gratitude, appreciation, and thankfulness. McCullough et al. found adequate



internal consistency ( $\alpha = .82$ ) and evidence for discriminant validity from other mental health variables.

The Hope Scale (Snyder et al., 1991) consists of 8 items that assess one's perceived successful agency and the ability to pursue one's goals. A 4-point Likert scale is used to indicate the extent to which each statement describes the participant. Snyder et al. found adequate internal consistency ( $\alpha = .74-.84$ ), temporal stability ( $r = .73-.85$ ), and evidence for convergent and discriminant validity. Roesch and Vaughn (2006) also found that the scale's factor structure was stable across diverse ethnic groups.

The Prosocialness Scale for Adults (PSA; Caprara, Steca, Zelli, & Capanna, 2005) was used to measure an altruistic orientation among participants. The 16 items tapped both behavioral and feelings associated with altruism and participants indicated how truthfully each statement described them through a 5-point Likert scale. Caprara et al. noted that the PSA had previously evidenced strong psychometric qualities from a classical test theory perspective in previous research, and then went on to demonstrate that the PSA possessed strong discriminant and informative capabilities through item response theory procedures.

The final indicator of mental health was the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). This five item scale is designed to assess one's global sense of overall life satisfaction through its 7-point Likert rating system. Its subjective nature is beneficial as it allows participants to rate their satisfaction based on their own criteria. This scale has been used as an indicator of mental health in similar works to the current study (e.g., Galen & Kloet, 2010; Horning et al., 2010). Pavot and

Diener (1993) found strong evidence supporting adequate reliability and validity, such as the scale's temporal stability that maintained across two week ( $r=.83$ ) and four year ( $r=.54$ ) intervals and its discriminant validity that was found with other measures of mental health such as the BDI ( $r=-.72$ )

**Social support.** A slightly modified version of the Social Support Questionnaire-6 (SSQ6; Sarason, Sarason, Shearin, & Pearce, 1987) was used. Six items were used to assess participants' satisfaction with their social support system in regards to their supports' acceptance, dependability, and ability to respond to one's negative emotional states. A total number of supports available was also asked. Sarason et al. found that the SSQ6 correlated expectedly with mental health indicators ( $r=-.49$  with a measure of loneliness) and possessed good internal reliability ( $\alpha=.90$  to  $.93$ ).

**Self-presentation bias.** Evidence exists that special groups may engage in socially desirable responding that can introduce error into data collection procedures (e.g., Presser & Stinson, 1998). In regards to the current study, because anonymous completion of the measures would not prevent an omnipresent God figure from knowing a theistic person's answers, socially desirable responding may occur in spite of the anonymous conditions. Ballard's (1992) Scale 1 short form version of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) was used to assess for self-presentation bias and socially desirable responding. Loo and Loewen's (2004) factor analytic procedures deemed Ballard's version as an improvement over the original version but its internal reliability is lower than what is psychometrically desirable at  $\alpha=.64$ .

**Religiousness and Spirituality.** Two separate questions asked questions to indicate on a 10-point Likert scale how religious they considered themselves and how spiritual they considered themselves, respectively. These items were not used for hypothesis testing but were included to test whether other variables were related to these measures expectedly.

**Demographic characteristics.** Due to the potential covariates described in multiple sections, demographic characteristics that may also moderate relationships with mental health variables were also inquired: geographic location, gender, race/ethnicity, age, education level, and income.

### **Data Analyses**

Pearson's  $r$  correlations were calculated to analyze the predictive relationship strength between theistic/atheistic certainty (by using the absolute value of the response to item 1, in conjunction with the values of responses to items 2, 3, and 4 on the theistic/atheistic certainty scale) and mental health variables to investigate Hypothesis 1a. For Hypothesis 1b, participants who indicated on item 1 of the theistic/atheistic certainty scale the strongest levels of theism (scores of 3) or the strongest levels of atheism (scores of -3) will be compared in regards to their scores for each of the mental health variables via MANCOVA tests and Pillai's trace statistics. Demographic characteristics and other covariates (i.e., age, gender, geographic location, income, education level, social support, and self-presentation bias) that are statistically relevant contributors to theistic/atheistic certainty and mental health were included as the covariates in the analyses. Pillai's trace was used as it is considered to be more robust against departures from normally

distributed data (Field, 2006). If significant differences were indicated, then follow up ANCOVA tests with Bonferroni adjustments were conducted to distinguish if specific differences existed by group membership. Cohen's *d* effect sizes (Cohen, 1988) were calculated to clarify the magnitude of group differences.

For Hypothesis 1c, structural equation modeling was used to test dogmatism's mediating relationship between one's level of theistic/atheistic beliefs (all four items including the absolute values of responses to item 1) and mental health. Structural equation modeling allows for the estimation of both direct and indirect mediating effects and is useful for analyses that include latent constructs, such as mental health. Model fit (for this hypothesis and all subsequent hypotheses and explorations) was assessed through the Tucker-Lewis Index (TLI), comparative fit Index (CFI), and root mean square error of approximation (RMSEA) tests. RMSEA values less than .10 (Browne & Cudeck, 1993), along with its 90% confidence interval, and CFI and TLI values greater than .90 (Marsh, Hau, & Wen, 2004), were used to indicate anywhere from good to marginal model fit to the data. Missing data were handled via multiple imputation methods. Wayman (2003) argued that multiple imputation is superior to other forms of addressing missing data, such as mean imputation and case-wise deletion, that can sometimes bias results by introducing error. The measurement model for the constructs was tested initially to ensure adequate fit for usage with the current and subsequent hypotheses testing. As shown in Figure 4's depiction of Hypothesis 1c, mediation was estimated by analyzing the path from the theistic/atheistic certainty variable to dogmatism, a path conducted from dogmatism to the mental health construct, as well as a direct path between theistic/atheistic certainty and the mental health construct.

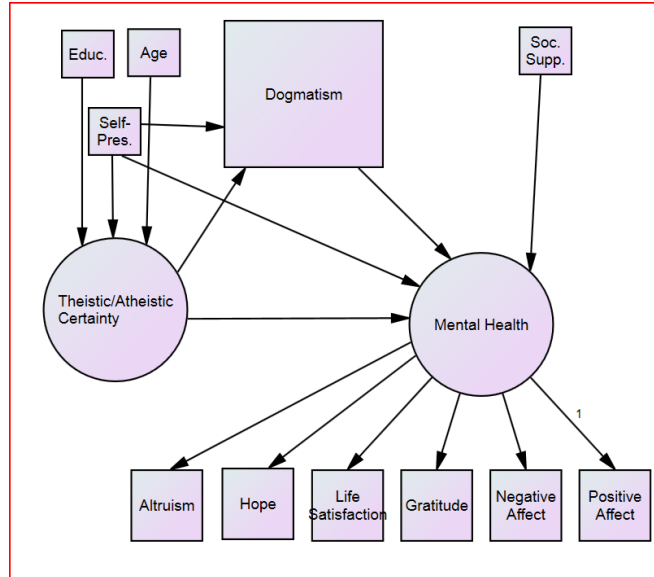


Figure 4. Hypothesis 1c model.

For Hypotheses 2a, and 2b, a multi-group analysis of a structural equation model was tested between religious participants and secular participants to determine whether a latent construct of religious/spiritual coping strategies predicted the latent construct of mental health, as shown in Figure 5. A measurement model at the item level for religious/spiritual coping construct was tested initially to ensure adequate fit for the analyses. To account for possible moderating effects described in previous works, gender, race/ethnicity, geographic location, the interaction between age and religious/spiritual coping, the interaction between income level and religious/spiritual coping were also included in the model. Additionally, recruitment source was also used as a possible moderator to account for differences between users that were recruited through differing channels.

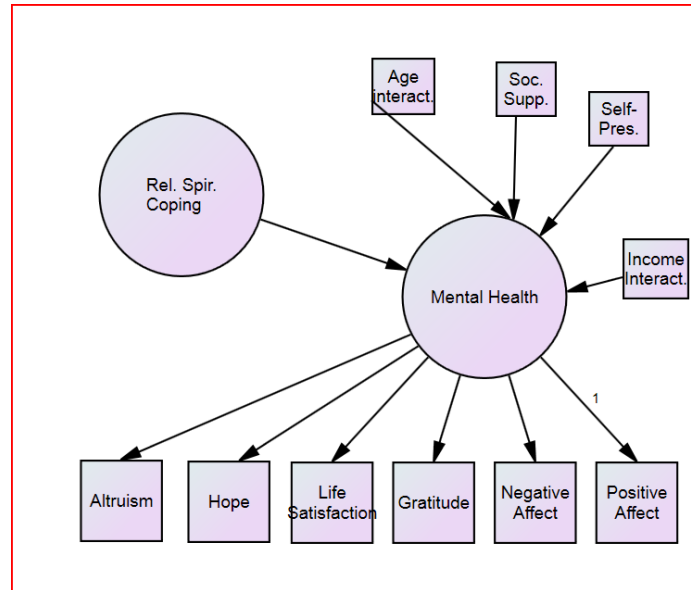


Figure 5. Hypotheses 2a and 2b model.

Hypotheses 3a and 3b were also tested through a multi-group structural equation model between religious and secular participants. A causal path from spiritual harmony onto the latent construct of mental health was calculated. Figure 6 illustrates this model.

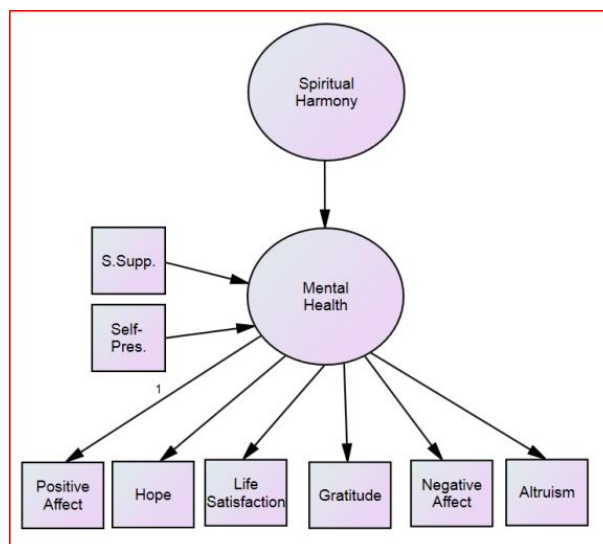


Figure 6. Hypotheses 3a and 3b model.

To answer the exploratory research question described earlier, the independent variables of dogmatism, religious/spiritual coping, spiritual harmony, and the full version of the theistic/atheistic certainty scale were used in a structural equation model to denote the relative predictive strengths for each of the variables onto the latent construct of mental health, as shown in Figure 7.

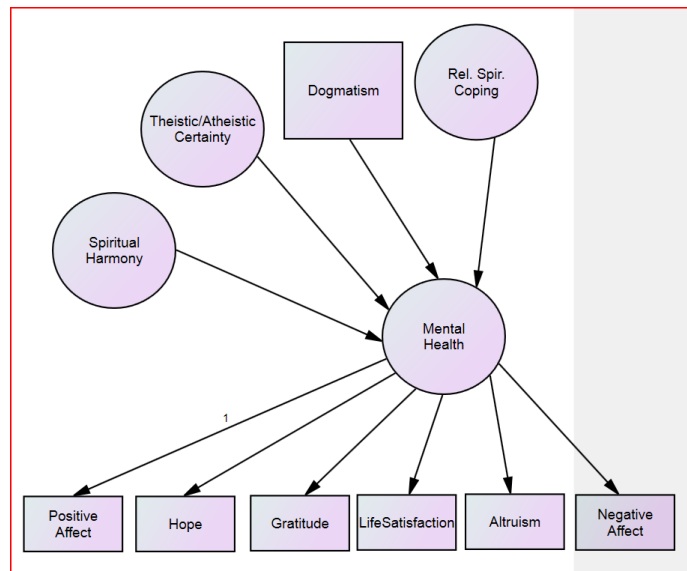


Figure 7. Exploratory research question model

## CHAPTER III

### RESULTS

#### **Sample and Recruitment**

The internet recruitment strategy resulted in 7,538 respondents, 7,338 of whom gave consent. Of those who gave consent, 4,667 (62%) were included in the final sample, which is the number reflected in each of the following tables unless otherwise noted. The most common reason for exclusion were participants who gave consent but proceeded not to complete any or most of the questions that followed ( $n = 2,579$ , or 34% of the original respondent pool). Other reasons that resulted in exclusion were indicating an age younger than 18 ( $n = 31$ ,  $< 1\%$ ), failing to correctly respond to all of the validity check questions embedded within the survey ( $n = 58$ ,  $< 1\%$ ), and submitting duplicate responses under the same IP address ( $n = 3$ ,  $< 1\%$ ).

In regards to the final sample, the mean age was 27.4 ( $SD = 10.5$ ), and ranged from 18 to 86 years of age. The gender distribution favored those that identified as male, amounting to 60.7% ( $n = 2,831$ ) of the sample, followed by females, who constituted 28.4% ( $n = 1,327$ ), with genderqueer participants, the third most numerous group, accounting for 1.1% ( $n = 52$ ). Intersex, questioning, transgender females, transgender males, and those who marked other, made up an additional 1.2% while non-responders to this question constituted the remaining 8.6% of the gender makeup. Most participants



were recruited via group forums from Reddit.com (73%, n = 3,405), followed by Facebook.com (14%, n = 653). Recruitment methods such as Craigslist, e-mail communication from a participant, and other internet sources comprised 4.6%, while the non-responders to this question made up the remaining 8.4%. Table 1 provides additional demographic information of the final sample.

Table 1

*Additional Demographic Information*

<b>Characteristic</b>	<b>%</b>	<b>N</b>
<b>Race/Ethnicity</b>		
Caucasian/White	78.2%	3,650
Biracial/Multiracial	3.3%	154
Asian	3.1%	143
Hispanic/Latino/Latina	3.0%	141
Other	3.9%	182
Missing	8.5%	397
<b>Annual Income</b>		
Less than \$20,000	21.8%	1,018
\$20,000-29,999	10.8%	502
\$30,000-49,999	15.6%	728
\$50,000-74,999	15.2%	710
\$75,000-99,999	10.4%	484
Greater than \$100,000	16.8%	784
Missing	9.4%	441
<b>Education Level</b>		
Less than high school	1.4%	65
High school	11.4%	530
Some college	31.8%	1484
Associate's	5.9%	277
Bachelor's	27.4%	1,278
Master's	10.8%	506
Doctoral	2.7%	127
Missing	9.0%	400
<b>Geographic Location</b>		
West U.S.	16.5%	768
Midwest U.S.	16.1%	750
Southwest U.S.	8.7%	407
Southeast U.S.	12.3%	572
Northeast U.S.	13.9%	650
Not continental U.S.	16.5%	769
Missing	16.1%	751
<b>Ideology</b>		
Atheism	37.2%	1,738
Agnosticism	19.8%	926
Christianity	11.0%	514
Spiritual, nonreligious	10.5%	489
Buddhism	3.1%	146
Judaism	1.2%	58
Islam	0.6%	29
Hindu	0.3%	15
Other	7.9%	367
Missing	8.2%	385

*Note.* Percentages may not add to 100 due to rounding.

## **Statistical Assumptions**

The assumption of normality was assessed visually to ascertain whether the data was distributed normally. Visual checks were performed in lieu of traditional statistical tests because the large sample size hindered the interpretive capabilities of tests, such as calculating skewness and kurtosis values, as well as the Kolmogorov-Smirnov test, which is prone to indicating non-normality in samples larger than  $n = 200$  even when the data actually resembles a normal distribution (Field, 2009). Visual inspection revealed that responses for each variable reflected normal distributions with two exceptions. The religious/spiritual coping scale was positively skewed, indicating a generally low endorsement of these coping styles across the sample overall. The gratitude scale was negatively skewed, indicating that a large portion of the sample tended to experience high levels of gratitude. These variables, along with the others, were evaluated for normality violations at the group level since group comparisons were being made to test most of the aforementioned hypotheses. Specifically, in accordance with Hypothesis 1b, the strongest theistically and atheistically certain group distributions were examined more closely as well as each religious and secular identity (for identities with at least  $n = 30$  because at this numerical threshold participant data is more likely to approximate a normal distribution; Field, 2009) because these identifiers would be pertinent for testing Hypotheses 2a, 2b, 3a, and 3b. Further visual inspection revealed that the gratitude variable was negatively skewed across all religious and secular groups. The religious/spiritual coping variable was positively skewed for only those who identified as atheist or agnostics, suggesting that it was these groups in particular that used these copings styles infrequently, which was consistent with conceptual expectations.

In regards to homogeneity of variance, Levene's test was too sensitive to be used informatively because of the sample size, and Hartley's  $F_{MAX}$  test was inappropriate due to the differences between group sample sizes. Consequently, the residuals were visually inspected for patterns and those that were found to potentially violate this assumption were found to be consistent with theoretical expectations (e.g., participants who identified as agnostic showed narrower dispersion on the theistic/atheistic certainty scale as it had only two options that typified agnostic beliefs, while theists and atheists had at least three options that were applicable). Square root, logarithmic, and reciprocal data transformations were explored but follow up testing evidenced that the transformed data created further anomalies (e.g., highly compressed variances) that tarnished the interpretability of subsequent group comparisons.

Outliers for each of the variables were identified through Tukey's (1977) method with various conventional levels of  $g$  (i.e.,  $g = 2.2$ , then subsequently tested at  $g = 3$ ). Outliers identified by the method were temporarily removed from the data set to test whether they would impact statistical testing. The removal of outliers using any level of  $g$  made no impact on the follow up testing so the outliers were reinserted into the data set. During a separate attempt to ascertain their impact, outliers were identified by determining scores beyond  $\pm 3$  standard deviations from the mean. They were each transformed to a value of  $\pm 3$  standard deviations but this method also proved to not make a practical difference in the follow up statistical tests that were done. Taken together, transforming outliers identified by either of these approaches proved inconsequential in follow up testing. As such, these changes to the dataset were reversed and the data as a whole were left untransformed in order to represent the participants' actual responses.

Multiple imputation was conducted in order to correct for missing values that occurred at random. Missing values constituted 4.48% of the data set. Following the suggestion of Bodner (2008), one imputation was create for each percentage of missing data, resulting in five imputed data sets that were used in the subsequent analyses. In sum, not including the inserted values from multiple imputation, the data was left untransformed and reflected participants' original responses.

### Hypothesis Testing

Tables 2 and 3 include information on the Pearson's *r* correlations as well as the means and standard deviations of the measured variables. Table 4 provides the reliability estimates of the scales used for the current study. Table 5 provides the variable means separated by ideological affiliation for groups with at least 30 respondents.

Table 2

#### Correlations

	TAC	Dog.	S. Sup.	SPB	SH	Grat.	L. Sat.	Hope	P. Aff.	N. Aff.	Alt.	RSC
TAC		.51**	.06**	.04**	.16**	.05**	.09**	.09**	.12**	-.08**	.02	.03*
Dog.	.51**		.02	.07**	.13**	-.04*	.07**	.00	.03	-.09**	-.05**	.11**
S. Sup.	.06**	.02		.13**	.37**	.46**	.47**	.34**	.38**	-.27**	.26**	.10**
SPB	.04**	.07**	.13**		.20**	.14**	.18**	.18**	.15**	-.31**	.22**	-.02
SH	.16**	.13**	.37**	.20**		.32**	.41**	.35**	.40**	-.32**	.18**	-.01
Grat.	.05**	-.04*	.46**	.14**	.32**		.56**	.46**	.47**	-.22**	.40**	.22**
L. Sat.	.09**	.07**	.47**	.18**	.41**	.56**		.55**	.47**	-.38**	.19**	.11**
Hope	.09**	.00	.34**	.18**	.35**	.46**	.55**		.57**	-.28**	.33**	.12**
P. Aff.	.12**	.03	.38**	.15**	.40**	.47**	.47**	.57**		-.12**	.35**	.15**
N. Aff.	-.08**	-.09**	-.27**	-.31**	-.32**	-.22**	-.38**	-.28**	-.12**		.03*	.03*
Alt.	.02	-.05**	.26**	.22**	.18**	.40**	.19**	.33**	.35**	.03*		.23**
RSC	.03*	.11**	.10**	-.016	-.01	.22**	.11**	.12**	.15**	.03*	.23**	

*Note.* TAC = Theistic/Atheistic Certainty; Dog. = Dogmatism; S. Sup. = Social Support

Satisfaction; SPB = Self-Presentation Bias; SH = Spiritual Harmony; Grat. = Gratitude;

L. Sat. = Life Satisfaction; P. Aff. = Positive Affect; N. Aff. = Negative Affect; Alt. = Altruism; RSC = Religious/Spiritual Coping.

\* $p < .05$ , two-tailed. \*\* $p < .01$ , two-tailed.

Table 3

*Means and Standard Deviations*

Variable	M (SD)	Possible Range
Theistic/Atheistic Certainty	5.07 (1.55)	1 to 7
Dogmatism	3.09 (1.10)	1 to 9
Social Support Satisfaction	3.62 (0.81)	1 to 5
Self-Presentation Bias	.41 (0.22)	0 to 1
Spiritual Harmony	-12.04 (8.68)	-100 to 0
Gratitude	5.67 (0.96)	1 to 7
Life Satisfaction	4.34 (1.41)	1 to 7
Hope	3.06 (0.46)	1 to 4
Positive Affect	3.38 (0.76)	1 to 5
Negative Affect	2.40 (0.84)	1 to 5
Altruism	3.67 (0.68)	1 to 5
Religious/Spiritual Coping	1.81 (0.84)	1 to 4

Table 4

*Reliability Estimates of Scales*

Scale	Cronbach's $\alpha$
Theistic/Atheistic Certainty	.73
Dogmatism	.87
Social Support Satisfaction	.89
Self-Presentation Bias	.70
Gratitude	.79
Life Satisfaction	.85
Hope	.83
Positive Affect	.88
Negative Affect	.89
Altruism	.91
Religious/Spiritual Coping	.83
Communal(I)	.88
Communal(E)	.85
Transcendent(I)	.97
Transcendent(E)	.96
Environmental(I)	.86
Environmental(E)	.85
Personal(I)	.76
Personal(E)	.80

*Note.* Scales with “(I)” and “(E)” at the end are referring to either the spiritual harmony ideals subscale or the spiritual harmony lived experience subscale, respectively.

Table 5

*Variable Means and Standard Deviations by Ideological Affiliation*

	TAC	Dog.	S. Sup.	SPB	SH	Grat.	L. Sat.	Hope	P. Aff.	N. Aff.	Alt.	RSC
<b>Agnosticism</b>	4.06 (1.28)	2.70 (.75)	3.55 (.80)	.39 (.21)	-13.53 (8.52)	5.56 (.92)	4.10 (1.43)	2.98 (.45)	3.26 (.76)	2.52 (.82)	3.62 (.67)	1.65 (.65)
<b>Atheism</b>	5.66 (1.13)	3.19 (1.01)	3.62 (.79)	.41 (.22)	-10.12 (7.43)	5.59 (.97)	4.34 (1.39)	3.06 (.45)	3.40 (.76)	2.33 (.83)	3.60 (.79)	1.39 (.58)
<b>Buddhism</b>	4.53 (1.65)	2.90 (.96)	3.53 (.87)	.41 (.22)	-13.92 (10.85)	5.71 (1.00)	4.38 (1.53)	3.08 (.52)	3.39 (.78)	2.43 (.90)	3.77 (.67)	2.49 (.77)
<b>Christianity</b>	6.02 (1.66)	3.86 (1.54)	3.78 (.80)	.41 (.22)	-13.27 (10.13)	6.03 (.90)	4.58 (1.40)	3.11 (.42)	3.48 (.72)	2.37 (.85)	3.79 (.66)	2.67 (.85)
<b>Judaism</b>	4.92 (1.34)	3.33 (1.11)	3.64 (.75)	.39 (.22)	-14.40 (11.84)	5.75 (.95)	4.51 (1.33)	3.16 (.42)	3.35 (.77)	2.50 (.87)	3.76 (.63)	2.15 (.84)
<b>Spiritual non-religious</b>	4.34 (1.53)	2.81 (.93)	3.67 (.81)	.42 (.22)	-13.37 (9.34)	5.86 (.91)	4.54 (1.39)	3.10 (.46)	3.44 (.80)	2.40 (.82)	3.78 (.67)	2.37 (.85)

*Note.* TAC = Theistic/Atheistic Certainty; Dog. = Dogmatism; S. Sup. = Social Support Satisfaction; SPB = Self-Presentation Bias; SH = Spiritual Harmony; Grat. = Gratitude; L. Sat. = Life Satisfaction; P. Aff. = Positive Affect; N. Aff. = Negative Affect; Alt. = Altruism; RSC = Religious/Spiritual Coping.

**Hypothesis 1a.** This hypothesis posited that higher levels of theistic/atheistic certainty would positively predict mental health. Partial support for this hypothesis was found while controlling for the variance contributed by social support satisfaction, income level, age, gender, recruitment channel, race/ethnicity, geographic region, and education level. There was a statistically significant relationship between the theistic/atheistic certainty level with life satisfaction,  $pr = .06$ ,  $p < .01$ (two-tailed); hope,  $pr = .05$ ,  $p < .01$ (two-tailed); and positive affect,  $pr = .09$ ,  $p < .01$ (two-tailed). Each of these would be considered less than a small-sized effect as they did not meet the traditional cutoff of  $pr = .10$  (Cohen, 1988). The statistically nonsignificant results were



as follows: gratitude,  $pr = .00$ ,  $p = .83$ (two-tailed); negative affect,  $pr = -.03$ ,  $p = .11$ (two-tailed); altruism,  $pr = .01$ ,  $p = .77$ (two-tailed).

**Hypothesis 1b.** Theistic and atheistic participants with the strongest levels of certainty (i.e., absolute certainty in God's existence or nonexistence) were hypothesized to have similar levels of mental health. Partial support was found for this hypothesis. The theistically certain participants ( $n = 355$ ) were compared to the atheistically certain participants ( $n = 531$ ) while controlling for the variance accounted for by social support satisfaction, income level, age, gender, recruitment channel, race/ethnicity, geographic region, and education level. MANCOVA testing using Pillai's trace revealed that there was a significant effect of certainty type on mental health,  $V = .040$ ,  $F(6, 861) = 6.020$ ,  $p < .001$ , partial  $\eta^2 = .040$ . Given the significant result, follow up ANCOVA tests were done for each of the six mental health variables with a Bonferroni adjustment threshold of  $p = .007$ . Table 6 depicts the mental health means for each of the 8 certainty types.

Table 6

*Mental Health Variable Estimated Marginal Means and Standard Deviations by Certainty Type*

	Grat.	L. Sat.	Hope	P. Aff.	N. Aff.	Alt.
<b>Absolutely Certain God Exists (n = 385)</b>	5.97 (.79)	4.61 (1.38)	3.12 (.43)	3.56 (.70)	2.44 (.88)	3.82 (.63)
<b>Mostly Certain God Exists (n = 266)</b>	5.91 (.77)	4.53 (1.37)	3.09 (.43)	3.44 (.75)	2.37 (.84)	3.66 (.64)
<b>Somewhat Certain God Exists (n = 152)</b>	5.68 (.88)	4.01 (1.32)	3.00 (.41)	3.28 (.68)	2.52 (.80)	3.69 (.68)
<b>Existence or Nonexistence is Unknowable (n = 941)</b>	5.71 (.99)	4.30 (1.46)	3.06 (.47)	3.38 (.78)	2.44 (.84)	3.73 (.68)
<b>Unsure about Existence or Nonexistence (n = 478)</b>	5.66 (.92)	4.30 (1.39)	3.03 (.45)	3.31 (.80)	2.40 (.81)	3.61 (.69)
<b>Somewhat Certain God Does Not Exist (n = 325)</b>	5.58 (.94)	4.27 (1.31)	2.99 (.43)	3.31 (.71)	2.47 (.81)	3.60 (.67)
<b>Mostly Certain God Does Not Exist (n = 1,531)</b>	5.63 (.92)	4.32 (1.37)	3.04 (.45)	3.36 (.76)	2.35 (.82)	3.63 (.67)
<b>Absolutely Certain God Does Not Exist (n = 586)</b>	5.59 (1.05)	4.40 (1.48)	3.14 (.49)	3.51 (.75)	2.34 (.85)	3.65 (.74)

*Note.* Grat. = Gratitude; L. Sat. = Life Satisfaction; P. Aff. = Positive Affect; N. Aff. = Negative Affect; Alt. = Altruism.

ANCOVA testing showed that there was a significant effect of certainty type on gratitude,  $F(1, 866) = 27.162, p < .001$ , partial  $\eta^2 = .030$ , meaning that theistically certain participants had higher levels of gratitude. The effect size difference between groups based on the estimated marginal means was  $.41d$ , a medium sized effect favoring the mental health of those who were absolutely certain God exists.

ANCOVA testing showed that there was not a significant effect of certainty type on life satisfaction,  $F(1, 866) = 3.906, p < .048$ , partial  $\eta^2 = .004$ , meaning that theistically and atheistically certain participants had similar levels of life satisfaction. The effect size difference between groups based on the estimated marginal means was

.15*d*, a small sized effect favoring the mental health of those who were absolutely certain God exists.

ANCOVA testing showed that there was not a significant effect of certainty type on hope,  $F(1, 866) = .027, p = .869, \text{partial } \eta^2 < .001$ , meaning that theistically and atheistically certain participants had similar levels of hope. The effect size difference between groups based on their estimated marginal means was .04*d*, which was not meaningfully different from zero.

ANCOVA testing showed that there was not a significant effect of certainty type on positive affect,  $F(1, 866) = 3.224, p = .073, \text{partial } \eta^2 = .004$ , meaning that theistically and atheistically certain participants had similar levels of positive affect. The effect size difference between groups based on the estimated marginal means was .07*d*, which was not meaningfully different from zero.

ANCOVA testing showed that there was not a significant effect of certainty type on negative affect,  $F(1, 866) = 3.239, p = .072, \text{partial } \eta^2 = .004$ , meaning that theistically and atheistically certain participants had similar levels of negative affect. The effect size difference between groups based on the estimated marginal means was .12*d*, which was a small sized effect favoring the mental health of those who were absolutely certain that God does not exist.

ANCOVA testing showed that there was not a significant effect of certainty type on altruism,  $F(1, 866) = 6.234, p = .013, \text{partial } \eta^2 = .007$ , meaning that theistically and atheistically certain participants had similar levels of altruism. The effect size difference

between groups based on the estimated marginal means was  $.25d$ , which was a small sized effect favoring the mental health of those who were absolutely certain God exists.

Testing Hypothesis 1b revealed a mix of findings that supported or did not support expectations. Theistically certain participants showed more favorable mental health levels based on effect size calculations for gratitude, life satisfaction, and altruism, with gratitude being the most prominent difference. Atheistically certain participants showed more favorable mental health by having slightly lower levels of negative affect based on its effect size calculation. The effect size calculations supported Hypothesis 1b in regards to the negligible differences found between groups for the hope and positive affect variables. Based on the ANCOVA tests, life satisfaction, hope, positive affect, negative affect, and altruism were not statistically different between either group which supported Hypothesis 1b. The statistically significant effect for higher gratitude levels among the theistically certain did not support Hypothesis 1b. Overall, certainty type, be it theistic or atheistic in nature, ended up accounting for very little unique variance in the mental health variables when covariates were included in the model. In sum, due to the multiple nonsignificant effects there was partial support for Hypothesis 1b that those who were absolutely certain in God's existence or nonexistence had similar levels of mental health. Figures 8 through 13 detail all 8 levels of theistic/atheistic certainty and approximations of their mean values for each mental health variable (excluding the influence of the covariates).

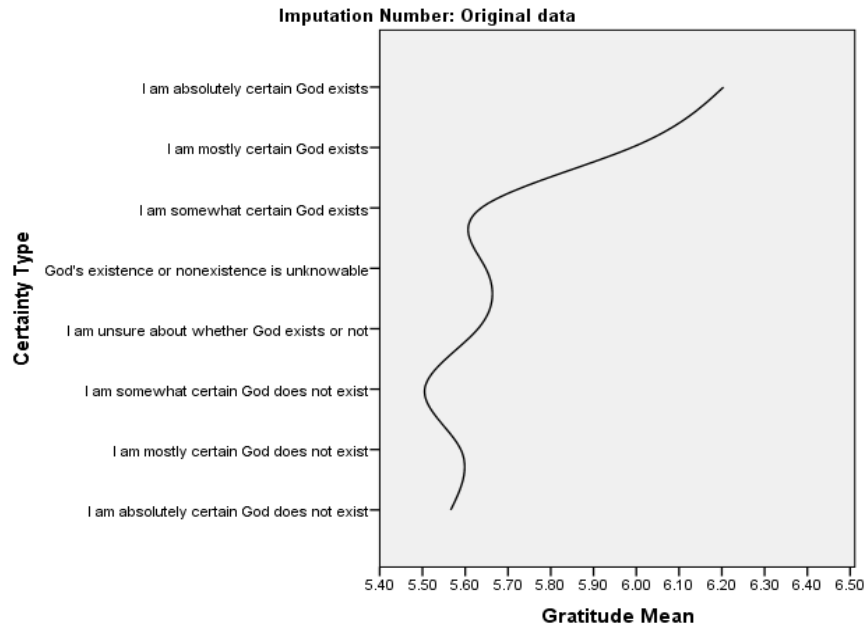


Figure 8. Certainty type with gratitude mean.

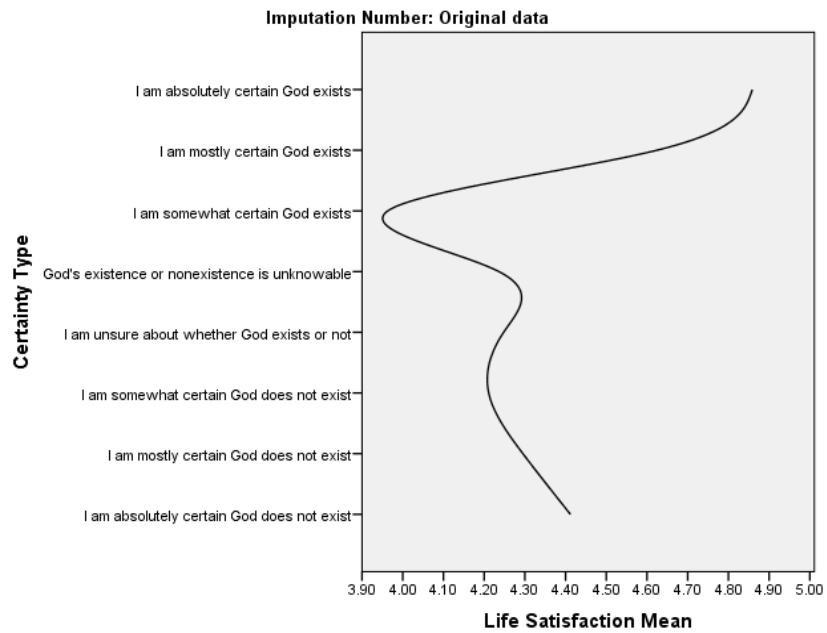


Figure 9. Certainty type with life satisfaction mean.

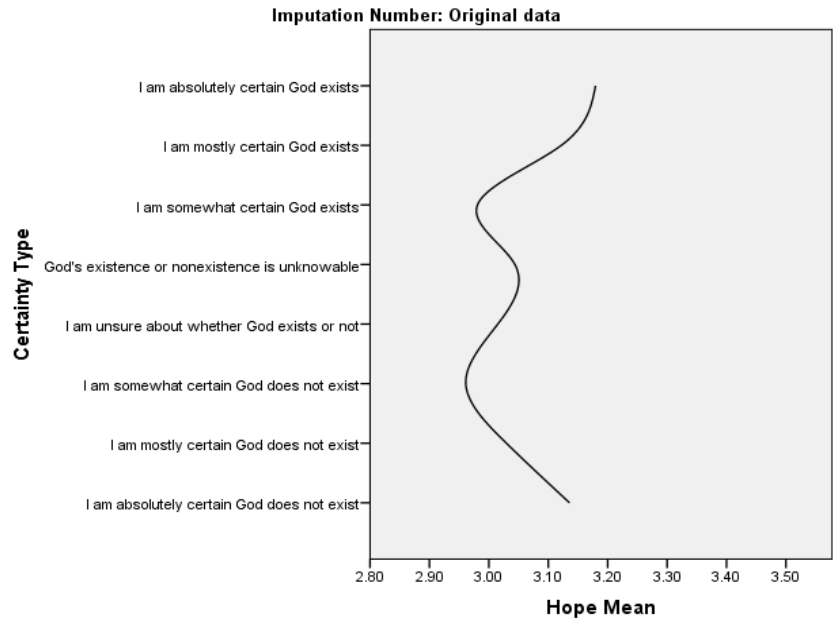


Figure 10. Certainty type with hope mean.

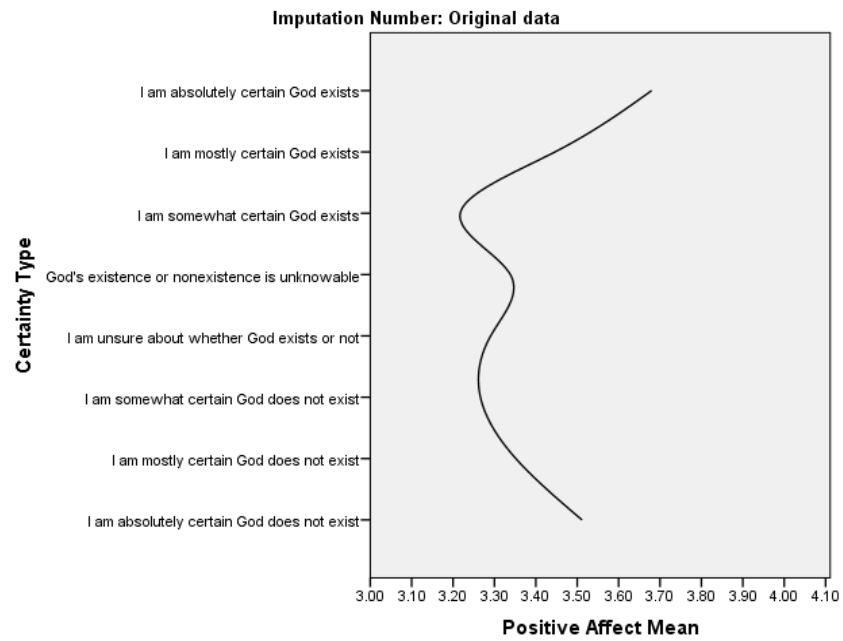


Figure 11. Certainty type with positive affect mean.

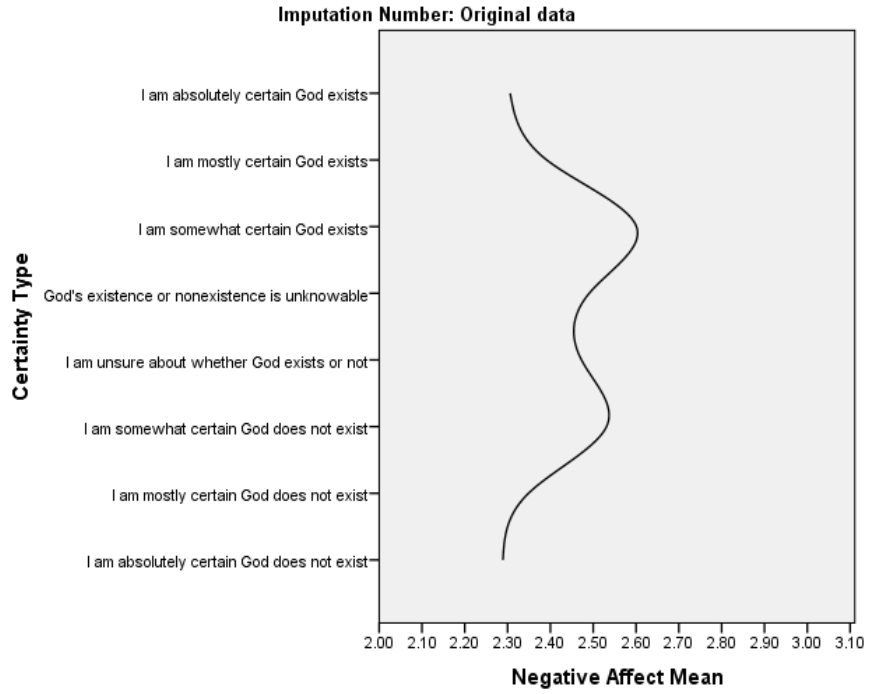


Figure 12. Certainty type with negative affect mean.

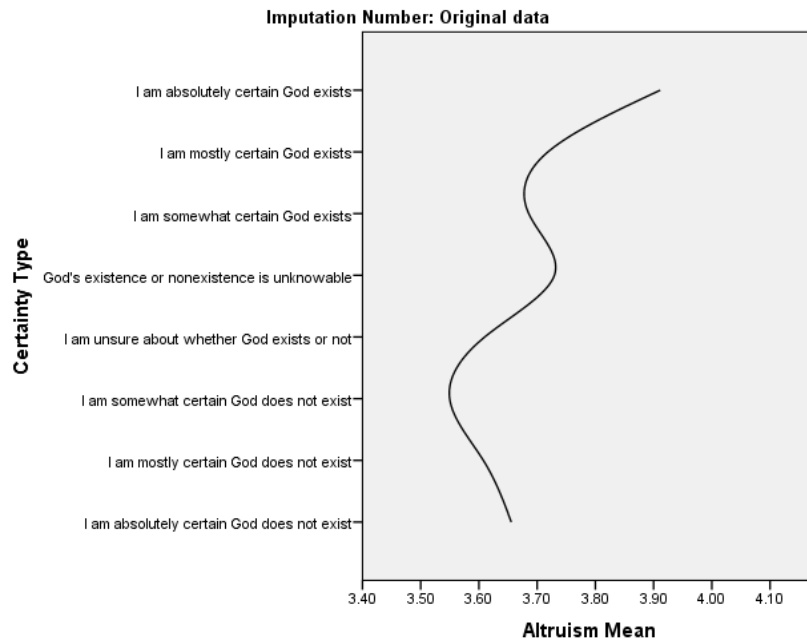


Figure 13. Certainty type with altruism mean.

**Hypothesis 1c.** This hypothesis posited that dogmatism would mediate the relationship between one's theistic/atheistic certainty levels and mental health within a structural equation model. A hybrid model was evaluated sequentially according to the procedures outlined by Anderson and Gerbing (1988) and Kenny (2011). The initial measurement model indicated fit indices values of  $\chi^2 = 3,467.75$ ,  $df = 151$ ,  $p < .001$  with a CFI of .858, a TLI of .821, and an RMSEA of .069 (with a 90% CI of .067-.071), evidencing a bad fit partly due to the altruism and negative affect indicators not loading on the mental health latent construct adequately. Altruism had a standardized loading of .42 and negative affect had a loading of -.36, as compared to the loadings of .71, .74, .71, and .68 for hope, life satisfaction, gratitude, and positive affect, respectively. Altruism and negative affect were removed from the model entirely because of the relatively weak loadings. Theoretically this made sense in that altruism may not have been a strong indicator of one's mental health because it focused on interpersonal behaviors that are socially adaptive as opposed to intrapersonal factors that typify one's individual mental health state. Negative affect may have emerged as theoretically distinct because it was the only construct associated with mental health that focused on negative aspects of mental health while all other indicators were positive indicators. The removal of altruism and negative affect was not integral to the hypothesis testing, as they were only included with the intent to create a comprehensive and widespread mental health construct. The remaining four variables still achieved this to a respectable degree.

The revised model resulted in an improvement in the fit indices, but the overall fit was still only marginal. The indices were  $\chi^2 = 1,872.20$ ,  $df = 116$ ,  $p < .001$  with a CFI of .914, a TLI of .886, and an RMSEA of .057 (with a 90% CI of .055-.059). In order to



improve model fit further, the second modification included a removal of the sheaf and dummy variables along with their paths associated with the education variable. The sheaf variable used for the educational levels was not significantly related to any variable in the model so all dummy variables along with the sheaf variable were removed in order to create a more parsimonious model. The path from the education sheaf variable to theistic/atheistic certainty had a standardized regression weight of .023 and a  $p$  value of .357. Education was only a control variable, and previous research had not consistently established a theoretical link between education level and variables like theistic/atheistic certainty, so its removal did not affect the theoretical underpinnings of the model. The removal of education from the model resulted in the following indices that demonstrated an improvement in the model and an overall acceptable model fit. The indices were  $\chi^2 = 1,053.04$ ,  $df = 50$ ,  $p < .001$  with a CFI of .926, a TLI of .903, and an RMSEA of .066 (with a 90% CI of .062-.069).

Evaluation of unspecified paths revealed that self-presentation bias and satisfaction with social support were significantly correlated with each other, and age had a statistically significant relationship with the mental health construct. These relationships were allowed to remain in the model. While further refinements could have been made to the model to increase the fit even further, such changes would have only been empirically justifiable and not have been theoretically justifiable so modifications were ceased at this point. The finalized recursive over-identified model, illustrated in Figure 14, had fit indices of  $\chi^2 = 952.71$ ,  $df = 48$ ,  $p < .001$  with a CFI of .934, a TLI of .909, and an RMSEA of .064 (with a 90% CI of .060-.067). Taken together, these fit indices evidenced an acceptable model fit to the data. Table 7 lists the associated

regression estimates of the entire model. A full mediation analysis was not conducted because while theistic/atheistic certainty was positively predictive of mental health and dogmatism, dogmatism was negatively related to mental health within the SEM model. Dogmatism's relationship with mental health was contrary to expectation outright and so no support was found for Hypothesis 1c that dogmatism was mediating the relationship between theistic/atheistic certainty and mental health.

Table 7

*Hypothesis 1c Regression Weights*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SPB → TAC	.041	.344	.140	2.462	.014
Age → TAC	.151	.026	.003	9.082	< .001
SPB → Dog.	.036	.184	.066	2.776	.005
TAC → Dog.	.565	.346	.011	31.586	< .001
Dog. → MH	-.081	-.024	.005	-4.512	< .001
S. Sup. → MH	.551	.222	.006	34.521	< .001
SPB → MH	.152	.229	.021	10.867	< .001
TAC → MH	.138	.025	.004	6.684	< .001
Age → MH	.067	.002	.000	4.790	< .001
MH → P. Aff.	.691	1.625	.040	41.020	< .001
MH → Gratitude	.705	2.087	.050	41.718	< .001
MH → L. Sat.	.754	3.273	.074	43.957	< .001
MH → Hope	.713	1.000	-	-	-
TAC → TACitem1	.683	1.000	-	-	-
TAC → TACitem2	.724	.783	.021	37.616	< .001
TAC → TACitem3	.485	.519	.019	27.702	< .001
TAC → TACitem4	.669	.660	.018	35.981	< .001

*Note.* TAC = Theistic/Atheistic Certainty; Dog. = Dogmatism; S. Sup. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. = Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health.

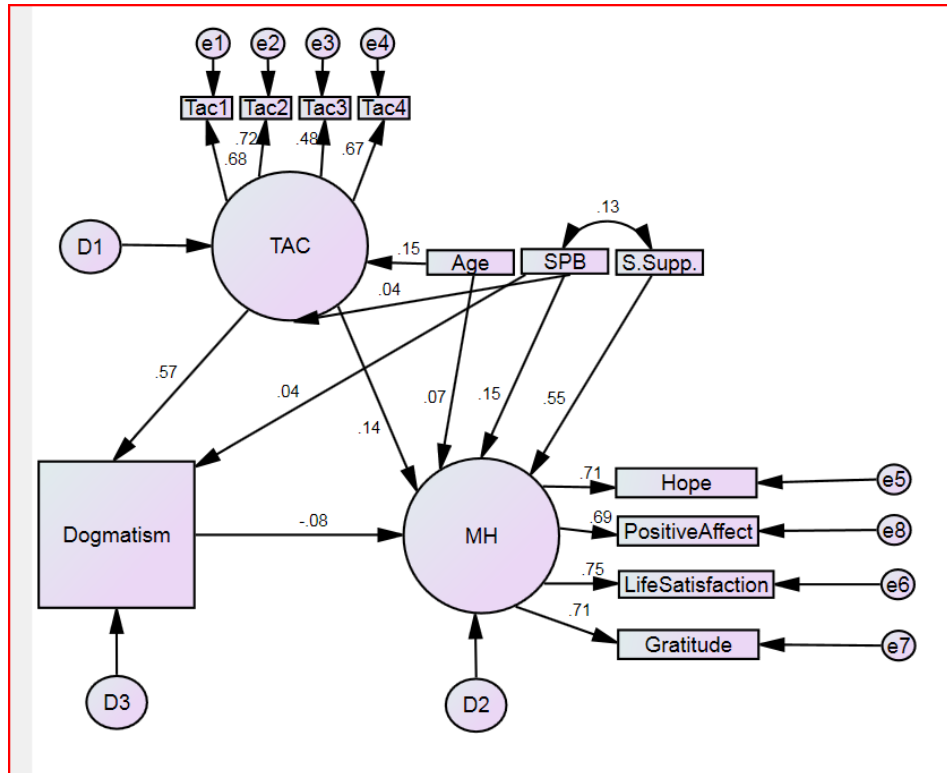


Figure 14. Hypothesis 1c final model with standardized regression weights.

Note. TAC = Theistic/Atheistic Certainty; S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; MH = Mental Health.

The four item version of the theistic/atheistic certainty variable used in this study is a linear representation of a curvilinear effect detailed by Galen and Kloet (2010). To explicitly test a curvilinear effect in a manner more similar to Galen and Kloet, an additional model was created to test how one's beliefs related to mental health. Item 1 from the theistic/atheistic certainty scale was entered into a model and was tested for a linear and a curvilinear relationship with mental health by inputting the raw value of Item 1 (range of 3 to -3) and a squared value of Item 1 as two separate predictor variables into a structural equation model. More specifically, the linear version of this variable considered higher levels of theistic beliefs as the greatest values with absolute certainty in

God's existence equaling a value of 3, mostly certain in God's existence equaling a value of 2, and somewhat certain in God's existence equaling a value of 1. Each progressive level of atheistic beliefs were lower in value with somewhat certain in God's nonexistence equaling a value of -1, mostly certain in God's existence equaling a value of -2, and absolute certainty in God's nonexistence being the lowest possible value of -3. Agnostic beliefs were given a value of 0 for both forms of the variable so that this belief type could serve as a midpoint and as the lowest point for the linear form and curvilinear form of the variable, respectively. The curvilinear form of this variable squared each of the linear values which consequently equated theistic beliefs and atheistic beliefs to similar values based on their certainty level (e.g., being absolutely certain in God's existence or nonexistence would both result in a value of 9 for the curvilinear variable version). These two variables were input into the model depicted below in Figure 15. The fit statistics for this model were  $\chi^2 = 849.989$ ,  $df = 26$ ,  $p < .001$  with a CFI of .901, a TLI of .864, and an RMSEA of .082 (with a 90% CI of .078-.087), which collectively indicated a marginal model fit. Model adjustments were not made because the intent was only to compare the linear and curvilinear forms of participant belief strength. As Table 8 indicates, both the linear variable and the curvilinear variable form were statistically significant predictors of mental health levels and both of these effects were small in regards to their strength. The linear depiction of belief strength that valued theism higher had a standardized regression weight of .09, and the curvilinear depiction that valued either type of certainty level higher had a standardized regression weight of .10.

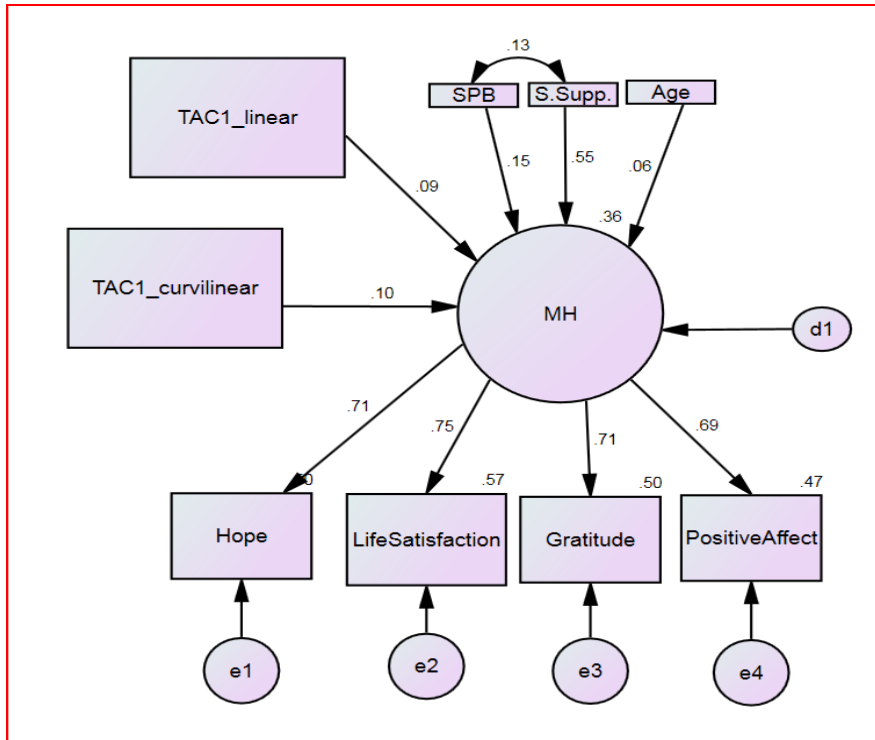


Figure 15. Linear and curvilinear comparison with standardized regression weights.

Note. TAC1\_linear = Theistic/Atheistic Certainty item 1 linear version;

TAC1\_curvilinear = Theistic/Atheistic Certainty item 1 curvilinear version; S. Supp. =

Social Support Satisfaction; SPB = Self-Presentation Bias; MH = Mental Health.

Table 8

*Linear and Curvilinear Comparison Regression Weights*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
Linear → MH	.090	.017	.003	6.553	< .001
Curvilinear → MH	.097	.010	.001	7.062	< .001
S. Sup. → MH	.548	.219	.006	34.234	< .001
SPB → MH	.149	.223	.021	10.690	< .001
Age → MH	.058	.002	.000	4.214	< .001
MH → P. Aff.	.687	1.625	.040	40.568	< .001
MH → Gratitude	.707	2.105	.051	41.538	< .001
MH → L. Sat.	.754	3.290	.075	43.621	< .001
MH → Hope	.709	1.000	-	-	-

*Note.* Linear = Linear form of Theistic/Atheistic Certainty item 1; Curvilinear =

Curvilinear form of Theistic/Atheistic Certainty item 1; S. Sup. = Social Support

Satisfaction; SPB = Self-Presentation Bias; L. Sat. = Life Satisfaction; P. Aff. = Positive

Affect; MH = Mental Health.

**Hypotheses 2a and 2b.** It was posited that religious/spiritual coping styles would be significantly predictive of mental health for both participants who identify as religious (Hypothesis 2a) as well as participants who identify as secular (Hypothesis 2b) while controlling for influences of gender, race/ethnicity, age, income level, geographic location, social support, and self-presentation bias. Specifically, religious participants included Buddhists, Christians, Hindus, Muslims, and Jewish participants (n = 752) while secular participants included agnostics, atheists, and the spiritual but nonreligious participants (n = 3,153).

The same latent construct for mental health from the final model for Hypothesis 1c was used for Hypotheses 2a and 2b. For the current model, the covariates associated with race/ethnicity status caused the measurement model solutions to be inadmissible

when calculated. The tests that followed found that the covariates of gender, recruitment channel, geographic location, age/coping interaction, income/coping interaction, had weak standardized regression weights (.08, .08, .03, .05, and .02, respectively) and caused poor model fit. Each of these variables were sequentially removed. The theoretically pertinent variables (i.e., religious/spiritual coping and its indicators as well as mental health and its indicators) along with the covariates of self-presentation bias, social support satisfaction, age, and income level remained after analyzing both the measurement and structural models. The resultant over-identified recursive model for both groups combined was  $\chi^2 = 910.21$ ,  $df = 47$ ,  $p < .001$  with model fit statistics of CFI of .938, a TLI of .913, and an RMSEA of .069 (with a 90% CI of .065-.072). Considered in conjunction, these fit indices suggested that the model was an acceptable fit to the data. Table 9 conveys the values of the estimates from the combined group final model while Figure 16 illustrates the final model used for both groups.

Table 9

*Hypothesis 2a/2b Regression Weights for a Combined Religious and Secular Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
RSC → MH	.169	.061	.006	10.687	< .001
Age → RSC	.146	.013	.001	8.562	< .001
S.Supp. → MH	.537	.217	.007	31.822	< .001
SPB → MH	.161	.246	.023	10.891	< .001
Inc. → MH	.175	.032	.003	11.801	< .001
RSC → RSCitem1	.865	1.000	-	-	-
RSC → RSCitem2	.824	.921	.017	54.310	< .001
RSC → RSCitem3	.578	.641	.018	36.576	< .001
RSC → RSCitem4	.707	.829	.018	46.592	< .001
MH → Hope	.720	1.000	-	-	-
MH → Gratitude	.709	2.073	.053	39.003	< .001
MH → L. Sat.	.756	3.267	.080	41.070	< .001
MH → P. Aff.	.691	1.619	.042	38.168	< .001

Note. S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. = Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; RSC = Religious/Spiritual Coping; Inc. = Income.

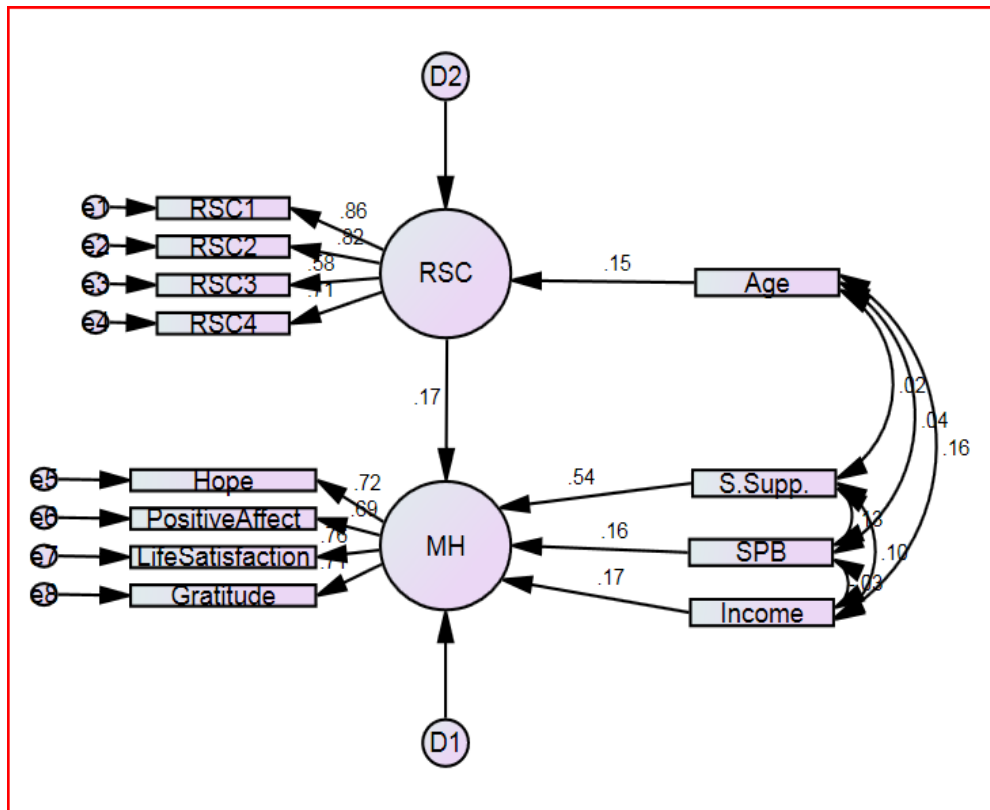


Figure 16. Hypotheses 2a/2b final combined group model with standardized regression weights.

Note. S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; MH = Mental Health; RSC = Religious/Spiritual Coping.

The standardized regression coefficient for the religious/spiritual coping construct onto the mental health construct was .26 for the religious participants and .14 for the secular group. This indicated that religious/spiritual coping was positively predictive for



both religious and secular participants and these relationships would be considered between small to medium sized effects (based on Kline's [1998] effect size metric where .1 to .2 is small, .3 to .4 is medium, and .5 or greater is considered large). For the multiple group analysis, the unconstrained model's values were  $\chi^2 = 890.69$  (df = 94) and the fully constrained model's values were  $\chi^2 = 973.86$  (df = 105), leaving the chi-square difference test result at 83.17 (df = 11),  $p < .001$ , meaning that the models were not invariant. In other words, the models as a whole were significantly different between religious and secular participants. Follow up chi-square analyses for the model with the path from the religious/spiritual coping construct to the mental health construct constrained did not achieve statistical significance. This model achieved a value of  $\chi^2 = 891.52$  (df = 95) which was below even the 90% confidence interval chi-square value of 893.39 (df = 95) meaning that the two groups were not statistically different in regards to the effect of religious/spiritual coping onto mental health. In light of these results, both Hypotheses 2a and 2b were supported in that religious/spiritual coping was a positive and significant predictor for both religious and secular participants, and religious/spiritual coping's predictive strength was not significantly different between religious and secular participant groups. Tables 10 and 11 detail the regression weights for the religious group and the secular group, respectively.

Table 10

*Hypothesis 2a/2b Regression Weights for Religious Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
RSC → MH	.258	.080	.012	6.612	< .001
Age → RSC	.270	.019	.003	6.889	< .001
S.Supp. → MH	.538	.185	.014	13.024	< .001
SPB → MH	.149	.190	.044	4.359	< .001
Inc. → MH	.107	.017	.005	3.197	= .001
RSC → RSCitem1	.812	1.000	-	-	-
RSC → RSCitem2	.820	.923	.047	19.496	< .001
RSC → RSCitem3	.534	.628	.046	13.797	< .001
RSC → RSCitem4	.557	.706	.049	14.406	< .001
MH → Hope	.644	1.000	-	-	-
MH → Gratitude	.725	2.373	.152	15.659	< .001
MH → L. Sat.	.725	3.637	.232	15.658	< .001
MH → P. Aff.	.710	1.852	.120	15.447	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; RSC =

Religious/Spiritual Coping; Inc. = Income.

Table 11

*Hypothesis 2a/2b Regression Weights for Secular Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
RSC → MH	.135	.066	.009	7.550	< .001
Age → RSC	.035	.002	.001	1.772	.076
S.Supp. → MH	.535	.225	.008	28.888	< .001
SPB → MH	.164	.260	.026	9.964	< .001
Inc. → MH	.190	.035	.003	11.490	< .001
RSC → RSCitem1	.816	1.000	-	-	-
RSC → RSCitem2	.746	.950	.024	39.151	< .001
RSC → RSCitem3	.565	.787	.026	29.834	< .001
RSC → RSCitem4	.739	1.056	.027	38.856	< .001
MH → Hope	.737	1.000	-	-	-
MH → Gratitude	.702	1.984	.056	35.489	< .001
MH → L. Sat.	.761	3.181	.084	38.005	< .001
MH → P. Aff.	.688	1.573	.045	34.838	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; RSC =

Religious/Spiritual Coping; Inc. = Income.

In consideration that the absence of statistically significant differences for the religious/spiritual coping effects between the secular and religious participants may have been due to the secular group including the spiritual nonreligious participants, an additional multiple group analysis was conducted that removed the spiritual nonreligious participants from the secular group and compared the remaining members (i.e., the atheists and agnostics) to the religious group. For this multiple group analysis, the unconstrained model's values were  $\chi^2 = 820.15$  (df = 94) and the fully constrained model's values were  $\chi^2 = 924.66$  (df = 105), leaving the chi-square difference test result at 104.51 (df = 11),  $p < .001$ , meaning that the models were not invariant. In other words, the models as a whole were significantly different between the religious group and the atheist/agnostic group. Follow up chi-square analyses for the model with the path

from the religious/spiritual coping construct to the mental health construct constrained achieved a value of  $\chi^2 = 823.37$  (df = 95) which was statistically significant at the 90% confidence interval threshold of  $\chi^2 = 822.86$  (df = 95). The standardized regression coefficient between religious/spiritual coping and mental health for the atheist/agnostic group was .08, compared to .26 for the religious group. These results collectively indicated that atheists and agnostics in particular did not demonstrate as strong a relationship between religious/spiritual coping and mental health as religious participants did. Table 12 depicts the regression weights for the atheist/agnostic group.

Table 12

*Hypothesis 2a/2b Regression Weights for the Atheist and Agnostic Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
RSC → MH	.078	.048	.012	3.900	< .001
Age → RSC	-.044	-.003	.001	-1.987	.047
S.Supp. → MH	.540	.225	.008	26.460	< .001
SPB → MH	.167	.261	.028	9.266	< .001
Inc. → MH	.188	.035	.003	10.383	< .001
RSC → RSCitem1	.758	1.000	-	-	-
RSC → RSCitem2	.698	1.033	.036	28.776	< .001
RSC → RSCitem3	.511	.851	.038	22.516	< .001
RSC → RSCitem4	.687	1.074	.038	28.557	< .001
MH → Hope	.731	1.000	-	-	-
MH → Gratitude	.696	1.995	.062	31.972	< .001
MH → L. Sat.	.758	3.205	.093	34.279	< .001
MH → P. Aff.	.679	1.562	.050	31.277	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; RSC =

Religious/Spiritual Coping; Inc. = Income.

**Hypotheses 3a and 3b.** These hypotheses posited that spiritual harmony would positively predict mental health levels among the religious participants (Hypothesis 3a)

and the secular participants (Hypothesis 3b) after controlling for social support and self-presentation bias. The same classifications of religious and secular groups from the initial Hypotheses 2a/2b analyses were used for this model.

Using the same latent construct structure for mental health as the previous models, the measurement model with both groups included was initially tested and indicated a mixture of acceptable and bad fit indices. The values were  $\chi^2 = 868.056$ ,  $df = 33$ ,  $p < .001$  with model fit statistics of CFI of .926, a TLI of .877, and an RMSEA of .080 (with a 90% CI of .076-.085). Further inspection indicated that the self-presentation bias variable had a weakly related regression weight of .09 onto the mental health construct and was removed because it was not originally included for theoretical reasons but only as a precaution for possible strong covariation effects. This change resulted in the following over-identified recursive model of  $\chi^2 = 632.889$ ,  $df = 25$ ,  $p < .001$  with model fit statistics of CFI of .945, a TLI of .901, and an RMSEA of .079 (with a 90% CI of .074-.084). Overall, these fit indices suggested that the model was an acceptable fit to the data. Table 13 conveys the values of the estimates from the combined group final model while Figure 17 illustrates that final model used for both groups.

Table 13

*Hypotheses 3a/3b Regression Weights for a Combined Religious and Secular Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SH → MH	.526	.054	.002	23.966	< .001
S.Supp. → MH	.335	.136	.007	19.375	< .001
SH → Pers.	.846	1.000	-	-	-
SH → Comm.	.685	.613	.016	37.487	< .001
SH → Env.	.531	.424	.014	30.052	< .001
SH → Tran.	.210	.210	.018	11.916	< .001
MH → Hope	.720	1.000	-	-	-
MH → Gratitude	.695	2.032	.052	38.837	< .001
MH → L. Sat.	.760	3.285	.078	41.940	< .001
MH → P. Aff.	.708	1.658	.042	39.520	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; SH = Spiritual

Harmony; Pers. = Personal Spiritual Harmony; Comm. = Communal Spiritual Harmony;

Env. = Environmental Spiritual Harmony; Tran. = Transcendent Spiritual Harmony.

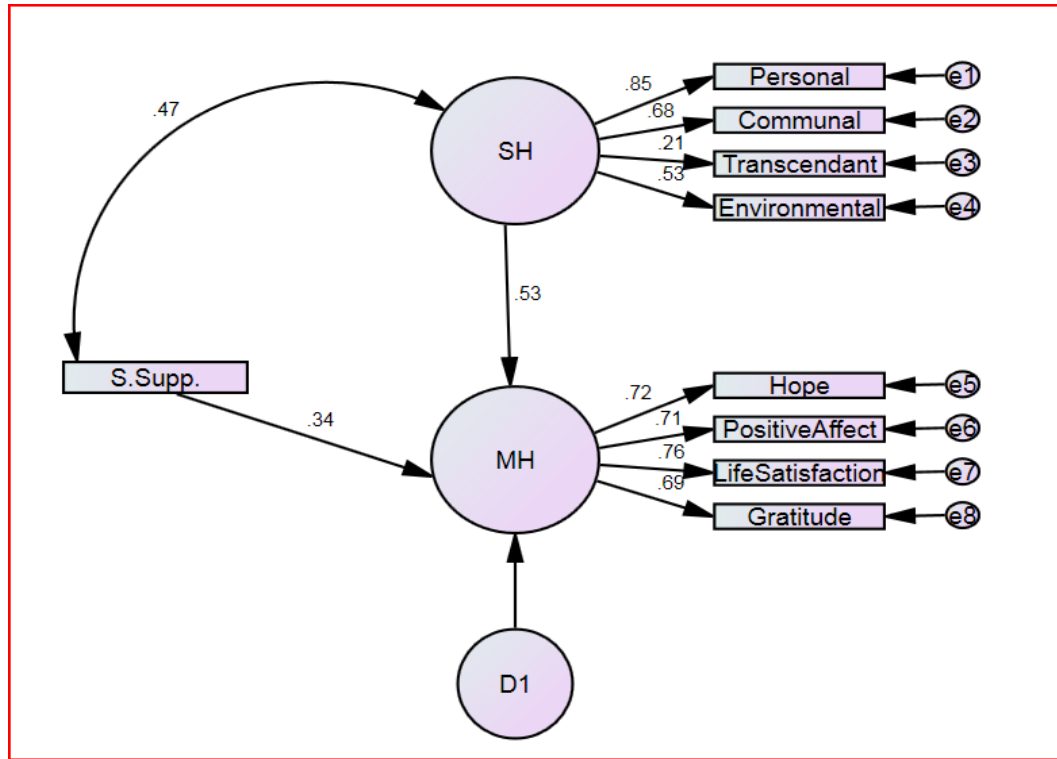


Figure 17. Hypotheses 3a/3b final combined group model with standardized regression weights.

Note. S. Supp. = Social Support Satisfaction; MH = Mental Health; SH = Spiritual Harmony.

The standardized regression coefficient for the spiritual harmony construct onto the mental health construct was .59 for the religious participants and .52 for the secular group. This indicated that spiritual harmony had a large effect on mental health for both religious and secular participants. For the multiple group analysis, the unconstrained model's values were  $\chi^2 = 636.737$  (df = 50) and the fully constrained model's values were  $\chi^2 = 743.917$  (df = 58), leaving the chi-square difference test result at 107.18 (df = 8),  $p < .001$ , meaning that the models were not invariant. Restated, the models as a whole were significantly different between religious and secular participants. Follow up chi-square

analyses for the model with the path from the spiritual harmony construct to the mental health construct constrained did not achieve statistical significance. This model achieved a value of  $\chi^2 = 638.476$  ( $df = 51$ ) which was below even the 90% confidence interval chi-square value of 639.44 ( $df = 51$ ). Given these results, both Hypotheses 3a and 3b were supported in that spiritual harmony was a significant predictor for both religious and secular participants, and the slightly stronger predictive strength for religious participants was not significantly different from the predictive strength for secular participants. Tables 14 and 15 list the regression weights specifically for the religious and secular group models, respectively.

Table 14

*Hypotheses 3a/3b Regression Weights for the Religious Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SH → MH	.590	.049	.004	11.538	< .001
S.Supp. → MH	.296	.104	.014	7.565	< .001
SH → Pers.	.864	1.000	-	-	-
SH → Comm.	.684	.601	.033	18.406	< .001
SH → Env.	.580	.482	.031	15.459	< .001
SH → Tran.	.491	.547	.042	12.941	< .001
MH → Hope	.653	1.000	-	-	-
MH → Gratitude	.712	2.302	.144	16.040	< .001
MH → L. Sat.	.731	3.626	.222	16.367	< .001
MH → P. Aff.	.737	1.897	.115	16.453	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; SH = Spiritual

Harmony; Pers. = Personal Spiritual Harmony; Comm. = Communal Spiritual Harmony;

Env. = Environmental Spiritual Harmony; Tran. = Transcendent Spiritual Harmony.



Table 15

*Hypotheses 3a/3b Regression Weights for the Secular Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SH → MH	.520	.056	.003	21.252	< .001
S.Supp. → MH	.338	.141	.008	17.570	< .001
SH → Pers.	.841	1.000	-	-	-
SH → Comm.	.685	.617	.019	32.843	< .001
SH → Env.	.519	.410	.016	26.010	< .001
SH → Tran.	.133	.123	.018	6.724	< .001
MH → Hope	.733	1.000	-	-	-
MH → Gratitude	.689	1.959	.056	35.155	< .001
MH → L. Sat.	.764	3.210	.083	38.497	< .001
MH → P. Aff.	.701	1.612	.045	35.715	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; SH = Spiritual

Harmony; Pers. = Personal Spiritual Harmony; Comm. = Communal Spiritual Harmony;

Env. = Environmental Spiritual Harmony; Tran. = Transcendent Spiritual Harmony.

In consideration that the absence of statistically significant differences for the spiritual harmony effects between the secular and religious participants may have been due to the secular group including the spiritual nonreligious participants, an additional multiple group analysis was conducted that removed the spiritual nonreligious participants from the secular group and compared the remaining members (i.e., the atheists and agnostics) to the religious group. For this multiple group analysis, the unconstrained model's values were  $\chi^2 = 539.938$  (df = 50) and the fully constrained model's values were  $\chi^2 = 654.12$  (df = 105), leaving the chi-square difference test result at 114.182 (df = 8),  $p < .001$ , meaning that the models were not invariant. In other words, the models as a whole were significantly different between the religious group and the atheist/agnostic group. Follow up chi-square analyses for the model with the path

from the spiritual harmony construct to the mental health construct constrained achieved a value of  $\chi^2 = 541.267$  (df = 51) which did not achieve statistical significance as it was below the 90% confidence interval threshold of  $\chi^2 = 542.64$  (df = 51). The standardized regression coefficient between spiritual harmony and mental health for the atheist/agnostic group was .51, compared to .59 for the religious group. These results collectively indicated that atheists and agnostics in particular demonstrated a similar relationship between spiritual harmony and mental health just as the religious participants did. Table 16 depicts the regression weights for the atheist/agnostic group.

Table 16

*Hypotheses 3a/3b Regression Weights for the Atheist and Agnostic Group*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SH → MH	.508	.053	.002	22.223	< .001
S.Supp. → MH	.348	.142	.009	16.689	< .001
SH → Pers.	.842	1.000	-	-	-
SH → Comm.	.672	.597	.020	29.595	< .001
SH → Env.	.506	.393	.017	23.247	< .001
SH → Tran.	.107	.097	.020	4.952	< .001
MH → Hope	.721	1.000	-	-	-
MH → Gratitude	.685	1.994	.063	31.819	< .001
MH → L. Sat.	.762	3.277	.094	34.949	< .001
MH → P. Aff.	.690	1.612	.050	32.035	< .001

*Note.* S. Supp. = Social Support Satisfaction; SPB = Self-Presentation Bias; L. Sat. =

Life Satisfaction; P. Aff. = Positive Affect; MH = Mental Health; SH = Spiritual

Harmony; Pers. = Personal Spiritual Harmony; Comm. = Communal Spiritual Harmony;

Env. = Environmental Spiritual Harmony; Tran. = Transcendent Spiritual Harmony.

**Exploratory research question.** Similar to the evaluative steps of the previous hypotheses for the SEM models, the exploratory research question model was evaluated

sequentially. Significant paths were retained from the measurement model and although the fit was not ideal, changes to the model were not made in order to keep all theoretically pertinent variables so that the research question could be addressed as intended (e.g., dogmatism was included in the model even though it was not significantly related or weakly predictive for several variables). The satisfaction with social support variable was also included since this construct had evidenced in previous models that it was consistently and strongly covariant with mental health. The final trimmed model is illustrated in Figure 18 with the regression weights displayed in Table 17. The results for this over-identified recursive model were  $\chi^2 = 2,405.581$ ,  $df = 124$ ,  $p < .001$  with model fit statistics of CFI of .916, a TLI of .884, and an RMSEA of .063 (with a 90% CI of .061-.065). Consideration of the fit indices suggested that the model was only a marginal fit to the data. This model was considered appropriate to at the very least explore the predictive strengths of each of the variables in a multivariate context.

Based on Kline's (1998) effect size metric, only the standardized regression coefficient of spiritual harmony had a large effect on mental health. The only medium sized effect was for the covariate of social support satisfaction. All other effects from theistic/atheistic certainty, religious/spiritual coping, and dogmatism would be considered small in size. Dogmatism was the only variable negatively predictive of mental health. This information suggested that spiritual harmony shared the strongest relationship with mental health when compared to any other variable used in this study.

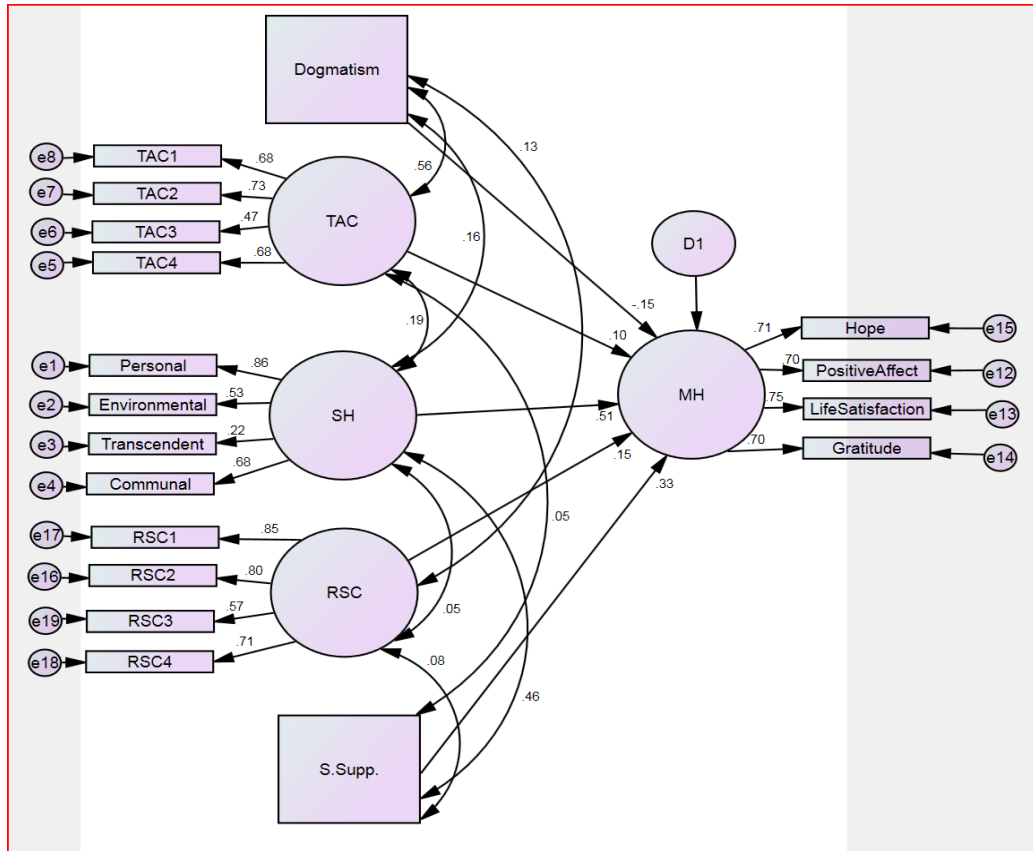


Figure 18. Exploratory research question final model with standardized regression weights.

Note. S. Supp. = Social Support Satisfaction; MH = Mental Health; SH = Spiritual Harmony; RSC = Religious/Spiritual coping; TAC = Theistic/Atheistic Certainty.

Table 17

*Exploratory Question Regression Weights*

Path	Standardized	Unstandardized	Error	Critical Ratio	<i>p</i>
SH → MH	.508	.051	.002	25.197	<.001
S.Supp. → MH	.326	.131	.006	20.685	<.001
Dog. → MH.	-.145	-.043	.005	-8.662	<.001
TAC → MH.	.100	.018	.003	5.289	<.001
RSC → MH.	.151	.055	.005	10.689	<.001

*Note.* Indicators for latent constructs were excluded for brevity. S. Supp. = Social

Support Satisfaction; MH = Mental Health; SH = Spiritual Harmony; TAC =

Theistic/Atheistic Certainty; RSC = Religious/Spiritual Coping; Dog. = Dogmatism.

## CHAPTER IV

### DISCUSSION

A diverse sample of religious and secular ideological adherents were recruited via various internet communication channels and completed questionnaire data regarding their beliefs, coping patterns, spirituality, and mental health. Specifically, one's existential belief strength, general dogmatic thinking style, religious/spiritual coping behaviors, and spiritual harmony were measured then investigated both separately and conjunctively in order to determine how each of these variables related to one's mental health levels. The mental health variable included a composite of several variables comprised of the following measured constructs: hope, positive affect, negative affect, gratitude, life satisfaction, and altruism. The groups used in the study included sizable representations of atheist, agnostic, Buddhist, Christian, Jewish, and spiritual nonreligious respondents. In particular, secular participants (agnostics, atheists, and the spiritual but nonreligious), a historically understudied but often speculated about group, made up the greatest portion of the 4,667 total sample. This study not only contributed to the field due to its diverse and large sample, but also because it used multiple definitions of mental health and examined construct relationships through advanced statistical techniques, such as structural equation modeling. Further, the measures of these constructs used in this study all evidenced acceptable psychometric properties and were more multiculturally applicable than previous studies because they were more consistent

with the ideologies of secular groups. The current study explored how one's certainty in God's existence or nonexistence would relate to one's mental health and general dogmatic thinking style. This study also explored whether religious and secular participants experienced similar or differing effects in regard to how religious/spiritual coping and spiritually harmonious lifestyles associated with their mental health levels.

### **Theistic/Atheistic Certainty and Dogmatism**

**Background.** Works such as Koenig et al. (2001) illustrated that numerous studies have found that as one's religiousness increases so does one's mental health. These relationships are moderated somewhat depending on the definitions of religiousness and mental health that are used, but overall the previous research has suggested a linear relationship between religiousness and mental health (i.e., as one increases, the other tends to also increase but not necessarily by an equal amount). As such, social groups, such as secular persons, who by definition exhibit little to no religious characteristics would be expected to be less mentally healthy, just as previous works have argued (Schumaker, 1992). In contrast, a smaller group of studies like Galen and Kloet (2010) have explored whether a curvilinear effect was more descriptive of the phenomena that affect one's mental health. In the context of studies similar to Galen and Kloet, the curvilinear effect refers to the idea that as one's belief strength increases their mental health will also increase. This effect could be considered curvilinear because it entails that one's belief may gravitate towards a religious pole or a secular pole, but no matter the orientation of the belief as long as it is strong it would likely associate with more favorable mental health levels. In other words, data from studies like Galen and Kloet have produced evidence that whether the beliefs of a person are religious or secular

in nature is not the vital mechanism that affects one's mental health, but it is the strength of those beliefs that are the crucial component regarding the relationship with one's mental health. Moreover, one who has strong religious beliefs and one who has strong secular beliefs would be expected to have similar levels of mental health and would both be healthier than religious or secular persons with weaker beliefs. The current study tested whether a linear relationship (i.e., as religious belief increases so does mental health) or a curvilinear relationship (i.e., as belief strength increases so does mental health) was more descriptive by having both religious and secular participants indicate their certainty levels in God's existence. The theistic/atheistic certainty construct in the current study measured the strength of one's certainty regardless of whether it was theistically or atheistically based (strength levels were differentiated from each other by participants describing themselves as absolutely certain, mostly certain, and somewhat certain in God's existence/nonexistence). Participants with agnostic belief characteristics were measured as the least certain in regards to the theistic/atheistic certainty construct.

One speculation that the current study explored was whether theistic/atheistic certainty may be acting as an indicator or proxy variable for one's general dogmatism level. Dogmatism was defined in the current study as possessing an unjustified certainty and conviction that is resilient against opposing beliefs. The salient difference between the dogmatism construct and theistic/atheistic certainty construct was that dogmatism was an indicator of one's general thinking style while theistic/atheistic certainty was specifically focused on one's beliefs about God's existence. If theistic/atheistic certainty was merely acting as proxy, then one would expect that dogmatism would be related to one's mental health and might be an equally if not more effective predictor of the



relationship between beliefs and mental health. In light of this possibility, participants also completed a measure that quantified their dogmatism levels.

**Findings, Interpretations, and Future Research.** Hypothesis 1a posited that theistic/atheistic certainty levels would positively predict one's mental health. The data revealed that participants' theistic/atheistic certainty levels showed weak but some statistically significant positive relationships with three of the six mental health variables. Although these effects were statistically apparent, they were not substantial enough to equate to a practically noticeable difference. One's certainty in God's existence or nonexistence explained less than 1% of the variability in one's life satisfaction, less than 1% of the variability in hope, and about 1.4% of the variability in positive affect. The magnitude of effects of belief certainty for the current study were similar to Galen and Kloet's (2010) results which demonstrated that belief certainty explained 2% and 1% of the variability in participants' life satisfaction and emotional stability, respectively. Theistic/Atheistic certainty levels for the current study did not evidence veritable effects on the other mental health variables of gratitude, negative affect, or altruism.

Hypothesis 1b posited that the participants with the strongest level of theistic certainty and those with the strongest level of atheistic certainty would have similar levels of mental health and partial support was found for this hypothesis. Echoing the findings of Galen and Kloet (2010), the current study found that more theistically and atheistically certain participants (i.e., those who were absolutely certain in God's existence/nonexistence) tended to have better levels of mental health than all of their counterparts who each were less certain about their beliefs. The curvilinear relationship (coined by Galen and Kloet) was partially accurate at describing the relationship between

beliefs and mental health for the current study. The current study suggested that while stronger certainty levels tended to equate to higher mental health levels, being devoid of certainty (i.e., having an agnostic belief type) was not as unhealthy as one would expect. In fact, participants who identified as agnostic because they believe God's existence or nonexistence was unknowable frequently showed more favorable mental health values than participants who were somewhat certain about God's existence or somewhat certain about God's nonexistence. Theoretically, perhaps a person who has determined that God's existence is unknowable is no longer in a state of identity moratorium (i.e., trying to establish and discover a fitting personal identity). The determination that the existence of God was unknowable may be also be characteristic of an established identity and this is one possible explanation of the better mental health (than what was theoretically expected) for this group. In consideration that identity moratorium states tend to associate with higher levels of anxiety, it is plausible that people who marked that they were unsure or only somewhat certain about their belief type were potentially experiencing identity moratorium and would thus be experiencing an apparent decrease in their mental health. Future studies could investigate whether identity moratorium states are observed among people with these belief patterns in particular because ego-identity states were not measured in the current study.

In regard to the second agnostic belief type participant group, those who were agnostic because they were unsure about whether God exists or not, they showed more varied mental health levels in relation to the participants in both the somewhat certain in God's existence or somewhat certain in God's nonexistence groups. Nonetheless, when both of these somewhat certain groups and both of the agnostic belief type groups were

considered together, the results supported the work of Krause and colleagues (e.g., Krause, 2006) because the findings indicated that higher levels of existential doubts related to lower levels of mental health. Another avenue for future research is to not limit investigation to only using belief certainty as an indicator of belief strength. It may be more illuminating to study effects on mental health by examining constructs like one's ideological identity salience, or activism (e.g., Smith & Cimino, 2012) because while one might possess strong or weak levels of certainty this does not necessarily mean that their beliefs play a salient role in their life, which may be a pivotal distinction. Whitley (2010) suggested that atheists can be more emphatic with their lack of belief and have differing salience and commitment levels regarding their secular identity. Taking this into account, future research should consider studying atheist cultural subgroups (e.g., anti-theists) in order to clarify the potential relationships of identity salience and activism with mental health.

Overall, the theistic/atheistic certainty investigation results suggested that the previous literature's descriptions of religiousness' or belief type's relationship with mental health were too confined in their depiction. The linear relationship of religiousness with mental health failed to account for the mental health benefits associated with being atheistically certain, and the curvilinear relationship descriptor did not account for agnostically believing participants to regularly display better mental health than the participants who possessed slightly higher levels of certainty, be it theistic or atheistic in nature, as evidenced by the mental health variable means for each specific group. One finding that should be highlighted specifically is that the participants who were absolutely certain in God's existence demonstrated higher levels of gratitude than

the participants who were absolutely certain in God's nonexistence. This finding supported the linear relationship hypothesis more than the curvilinear relationship hypothesis, but this finding did not manifest for all mental health variables and so it only provided limited support to a linear depiction. The variability in gratitude levels was higher for the theistically absolutely certain participants than their atheistically absolutely certain counterparts by a margin of 3% after accounting for contributions from other variables (e.g., social support satisfaction). One possible explanation is that gratitude may have been the only prominent mental health difference between religious and secular groups because the religious group was predominately Christian, and Christians in particular are instilled with the idea of being grateful especially in consideration of the grace demonstrated by Jesus Christ's sacrifice allowing for their redemption. Otherwise, the absolutely certain theist and atheist participants had similar levels of mental health overall. In sum, when it came to general mental health differences between each of the atheist, theist, and agnostic belief type groups, both curvilinear and linear relationship depictions were limited in their ability to predict mental health levels. A more apt descriptive term based on the current results might be that belief type and certainty levels shared a multi-curvilinear relationship with one's mental health. At the very least, the current study demonstrated that existential belief types and certainty shared a complex relationship with mental health.

Hypothesis 1c posited that dogmatism would mediate the positive predictive relationship between theistic/atheistic certainty and mental health. No support was found for this hypothesis. As expected, dogmatism was strongly related to one's theistic/atheistic certainty levels. Contrary to expectations, dogmatism was not positively

predictive of mental health when a composite mental health variable was created that included all six of the mental health variables in the study. The lack of a positive relationship between dogmatism and mental health was contrary to the results of the Rokeach (1960) and the Richek et al. (1970) studies that found greater dogmatism was related to less psychopathology. With the current study's results in mind, dogmatism was not found to be the explanatory and mediating variable for the positive relationship between theistic/atheistic certainty and mental health. Dogmatism possessed a mixture of relationships with the mental health variables when looked at individually. Dogmatism associated with greater mental health when considering it was positively predictive of life satisfaction and negatively predictive of negative affect, but dogmatism was negatively related to mental health when considering its negatively predictive relationship with gratitude and altruism. It possessed no significant relationships with positive affect or hope. No matter the direction of the relationship, whenever an effect was evident for dogmatism on any of these mental health variables it was weak in magnitude.

In respect to the negative relationship between dogmatism and a composite variable of mental health, along with theistic/atheistic certainty's positive relationship with mental health, a complex picture emerges regarding the emotional regulation theoretical perspective. Emotion regulation theory (Gross, 2006) explains that as one interacts with stimuli in their environment emotional experiences result and the person will consequently act in ways to experience a preferred emotional state (e.g., a person who had a stressful day at work takes the initiative to relax when they get home). It was originally expected that theistic/atheistic certainty and dogmatism would both associate with greater levels of mental health because each would play a role in preserving more

preferred or positive emotional states. Dogmatism's negative impact and theistic/atheistic certainty's positive impact on mental health were both weak effects and may not play a meaningful role with one's mental health. Dogmatism, based on its definitional component of a resiliency against opposing beliefs, was expected to prevent distress because it would prevent instances of cognitive dissonance which can lead to distress. This expectation was merited given previous works like Burris et al. (1997) that demonstrated that cognitive dissonance (i.e., the discomfort resulting from the simultaneous experience of two contradictory pieces of information) and negative affect can both be reduced when one appeals to their religious beliefs. Perhaps the absence of this relationship in the current study was more indicative of the temporary nature of the distress that cognitive dissonance creates. The Burris et al. study experimentally observed brief effects of dissonance, whereas the current study was trying to capture the beneficial buffer that dogmatism possessed against dissonance and the subsequent distress from a more stable, personality-based standpoint. Perhaps future research could verify whether dogmatism acts as a buffer in short-term experimental settings to distress only.

With the small effects of dogmatism on mental health being negatively predictive for the current study, it was possible that specific components of the dogmatism construct may have contributed to that relationship. Altemeyer (1996) found that dogmatism was strongly related to right wing authoritarianism, which definitionally includes a distaste for those who possess opposing beliefs. This weak but negative relationship between dogmatism and mental health may be due to dogmatic persons being more likely to be distressed by contact with people or communications that express ideological differences;

however, even this explanation cannot account for the complex relationship patterns that emerged between dogmatism and each of the six mental health variables. Follow up testing will be necessary to more clearly understand the relationship of dogmatism with mental health.

Unlike dogmatism, theistic/atheistic certainty levels and their relationship with mental health was consistent with the emotional regulation framework as hypothesized. From an emotional regulation theoretical perspective, it was anticipated that higher certainty levels would indicate one's resilience against instances of cognitive dissonance that occur in everyday life, similar to dogmatism, and subsequently act as a buffer against distress from the environment's presentation of stimuli that might contradict one's existential worldview. Moreover, a person with such strong resiliency would experience negatively impactful emotions less and their mental health state would be more favorable in the long term. The current study's findings were partially congruent with this theoretical perspective; however, the magnitude was not as strong as expected and a statistically veritable relationship did not exist for each of the mental health variables individually. Such a small and inconsistent effect suggested that theistic/atheistic certainty levels may not be the crucial ingredient that associates with greater mental health. What was notable based on the current study's results was that theistic/atheistic certainty, despite being strongly related to dogmatism, affected mental health levels in an opposite fashion than dogmatism. This demonstrated that while having resilient beliefs in general (i.e., being dogmatic) was not necessarily beneficial to one's mental health, having resilient beliefs specifically pertaining to existential matters (i.e., being theistically/atheistically certain) was mildly important in light of the limited strength of

the association between theistic/atheistic certainty and mental health. Possibly, the differential effect between dogmatism and theistic/atheistic certainty was that that theistic/atheistic certainty in particular helps one come to terms with mortality.

Theistically certain participants are more likely to believe that they will join their deity when they perish, while atheistically certain participants have been compelled to come to terms with the idea that they have one life to live and their only option is to make the most of it. The only limitation of this perspective is that it does not account for why those participants that believed God's existence or nonexistence was unknowable tended to have slightly greater mental health levels than the theists and atheists who were only somewhat certain about God's existence or nonexistence. Perhaps this difference was due to the reasons posited earlier, in that participants who have decided God's existence or nonexistence is unknowable have resolved their identity moratorium and are no longer experiencing heightened levels of anxious searching for a belief that fits them.

**Limitations and Additional Implications.** A few limitations were inherent with the measurement of theistic/atheistic certainty. A small group of secular participants provided the same feedback that they disliked that the theistic/atheistic certainty measure sometimes used the word "belief." These participants noted that the tenets of atheism can only be considered a belief in a colloquial sense, and that to say something does not exist, such as God, does not qualify as a specific belief on its own. Referring to atheistic tenets as a belief suggested that atheists have their own kind of "faith" tantamount with theistic faith, which these secular participants felt was not considerate of the atheistic perspective that God is a construct that was never logically created via evidential proof and that it is incoherent to have a belief in a construct that was irrationally conceived and has never



existed. Additionally, secular participants as well as non-monotheistic religious participants commented that the use of the term God was problematic for them specifically because God was not clearly defined and the implied Judeo-Christian conception of God was not applicable to all participants. Use of terms that were inclusive of polytheistic, deistic, and pantheistic perspectives would have been more appropriate. Future research devoted to scale development could help create more refined measures that encompass the diversity of ideologies between participants to more accurately account for how certainty type relates to other constructs.

As posited by Ross (1990), determining the strength of beliefs is important when investigating a relationship with mental health and limiting descriptions to only the ideological label of a sample obscures the interpretability of research. The emergent implication of the results of the current study was that researchers need to consider the heterogeneity of religious and secular groups, and that blanket statements tend to simplify complex relationships that can occur between mental health and the array of possible ideological affiliations of which participants might identify. For example, Hall et al. (2008) made the declaration that secularity is a health liability and that differentiating between religious and secular identities could potentially help aid medical decision making. Schumaker (1992) preceded Hall et al. by declaring that being nonreligious was bad for one's health. Based on the current study, the Hall et al. and Schumaker assertions were potentially incorrect and at the very least they were large overstatements based on the current findings. More studies should consider Hwang et al.'s (2009) argument that combining secular groups with low religiousness groups is problematic for interpretative considerations and that studies that did, such as Pollner (1989), potentially made

erroneous conclusions. A maxim of multiculturally considerate research is that within-group variability of traits (e.g., mental health) concurrently exist alongside between group variability (see Costigan, Bardina, Cauce, & Kim, 2006; Sevig, Highlen, & Adams, 2000) and researchers should account for such variability within the hierarchical group labels when interpreting data. With the current study showing that the agnostics (specifically, those who indicated they were agnostic because they were unsure) and the weakly affirming atheistic and theistic participants tended to have the lowest mental health levels, using one's religious or secular identity status to partly contribute to making medical decisions, as Hall et al. suggested, would be unwise. However, members of the helping professions should be vigilant for people whose ideologies are more affected by doubt due to the potential mental health disparity they experience when compared to other ideological perspectives. Culturally informed treatments, such as multiculturally informed psychotherapy and spiritually integrated psychotherapy (e.g., Aten & Leach, 2009) could be infused with helping services to meet the mental health needs of these populations.

### **Religious/Spiritual Coping**

**Background.** Religious/spiritual coping strategies have been studied numerous times in regards to how they relate to mental health (Pargament, 1997). As the meta-analysis of Ano and Vasconcelles (2005) has evidenced, the effects of religious/spiritual coping on mental health are consistently positive. Previous research has limited itself to primarily studying Christians using these religious or spiritual coping strategies. Coping strategies that double as both religious and/or spiritual have not been isolated from the extant findings as previous studies have tended to use a combination of both the strictly

religious coping mechanisms in conjunction with those that could be seen as simultaneously religious and spiritual. With these limitations of previous studies in mind, there is a need to investigate spiritual coping strategies that are not limited to religious traditions and are not only enacted by religious adherents. Instead, investigating whether these coping mechanisms also hold a beneficial relationship to mental health among populations that are not religious could foster new insights about healthy living. Previous research has shown that secular populations value spirituality (O'Connell & Skevington, 2005), thus it is plausible that secular populations might also be receiving mental health benefits from spiritual coping mechanisms.

**Findings, Interpretations, and Future Research.** A second set of hypotheses posited that religious participants who reported using religious/spiritual coping strategies would also have better mental health (Hypothesis 2a) and that secular participants who used religious/spiritual coping strategies would similarly experience better mental health (Hypothesis 2b). A multiculturally considerate measure of coping that could simultaneously be applied to both religious and secular participants was used to investigate the relationship between religious/spiritual coping and mental health. As expected, higher levels of religious/spiritual coping were related to greater mental health for both groups which supported both Hypothesis 2a and 2b. The strength of this effect was not statistically different between groups and the magnitude of this effect would be considered between small to medium for both religious and secular participants. A notable finding from the religious/spiritual coping analyses was the evidence that secular participants were also using religious/spiritual coping and from a correlational standpoint these coping behaviors appeared to associate with more favorable mental health levels.

Horning et al. (2011) found that religious coping was used in differing amounts between religious and secular participants and the current study confirmed those findings by also finding that religious adherents used religious/spiritual coping more frequently. The current study's religious/spiritual coping scale allowed for a possible mean value between 1 and 4. Atheists' mean value was 1.39, and agnostics' mean value was 1.65, which were both lower than the religious groups that ranged from values of 2.15 for the Jewish participants and 2.67 for the Christian participants. If one were to transform Horning et al.'s coping measure to a 1 to 4 scale like the current study's, the mean values for religious coping would be 1.10 for atheists, 1.21 for agnostics, 2.53 for a low religiousness group, and 3.52 for a high religiousness group. Comparatively, the coping trends were similar between the current study and Horning et al.'s study despite the use of different measures and somewhat different group distinctions. Notwithstanding the different coping frequencies between groups for the current study, the data evidenced that religious/spiritual coping was beneficially related to mental health for both religious and secular groups; however, religious participants evidenced more of a beneficial relationship between religious/spiritual coping and mental health than atheists and agnostics did specifically. Overall, the support for a positive effect between religious/spiritual coping and mental health added to the prevailing results of numerous previous studies that also identified the same positive relationship (e.g., Koenig et al., 1995), but the current study's results are unique due to the inclusion of multiple secular groups.

As expected, the beneficial use of religious/spiritual coping strategies to counter stressful stimuli supported an emotional regulation theoretical perspective. Based on the

items that make up the religious/spiritual coping scale, this meant that both religious and secular participants who more frequently prayed or meditated, purposely sought comfort from their religious or spiritual ideals, connected spiritually with others, or focused on their life being part of a larger spiritual force achieved more emotional regulation benefits that presumably helped their mental health state when faced with a stressful experience. What these activities specifically looked like for each ideological group is unclear and the magnitude of effects of this relationship varied in strength among each ideological group as well. For example, how a Buddhist participant found comfort in their beliefs was not articulated and whether they experienced the same magnitude of benefits of using religious/spiritual coping strategies with other groups was not explored in the current study. Likewise, when an agnostic person coped by connecting spiritually with others it may have looked different from how the Christian participant meant they spiritually connected with others in response to stress and whether this coping method impacted their mental health to the same extent was not investigated. Regardless of these subjective differences, there was initial evidence in the data that spiritual coping practices in general helped one combat stress by potentially helping them focus on each of their spiritual proclivities that allowed for transcending beyond the difficulties that humans face every day.

Wilkinson and Coleman (2010) felt that the crucial factor for a person to cope effectively was having a strong ideological belief system, be it religious or secular in nature. The current study did not test for a moderating effect between belief strength and coping, but this study did show that religious/spiritual coping behaviors were uniquely predictive of mental health levels even when one's strong beliefs (i.e., theistic/atheistic

certainty) were considered. This finding suggested that both the use of religious/spiritual coping behaviors used in response to stressful situations and the strength of one's belief each played a unique, albeit small, role in affecting one's mental health.

**Limitations and Additional Implications.** A limitation of only using religious/spiritual coping items that focused on positive reactions to stress is that it excluded the potential negative effects that sometimes occur from particular religious/spiritual coping strategies. Pargament et al. (1998) stated that negative religious coping strategies (e.g., being angry at God for a life stressor), despite being used less often than positive religious coping strategies, tended to associate with poorer mental health levels. The items on the religious/spiritual coping measure only tapped into the relationship of positive religious/spiritual coping specifically. There is a need for religious/spiritual coping measures that look at a broader variety of coping responses types, be they positive or negative, while at the same time not limiting themselves to coping that narrowly reflects only Christian, theistic, or monotheistic worldviews. Additionally, qualitative investigations could be useful to illuminate how the different ideological adherents used these coping strategies. The items of the current quantitative measure were necessarily vague in order to maintain applicability to the diverse populations being questioned, but future research that allows participants to describe their coping experiences with greater personalized detail could shed light on how each group specifically used their spirituality to cope with stressful contexts.

### **Spiritual Harmony**

**Background.** Koenig (2008) described that in the past social science commonly considered that spirituality was a subcategory subsumed by religion. As theoretical understandings evolved, Koenig detailed that more recent literature tends to consider the relationship between these two constructs oppositely, wherein religion has become a subcategory subsumed by spirituality. Extending from the evolution of the terms religion and spirituality, it is presently understood that one can be spiritual without necessarily being religious, which entails that groups such as secular people may also endorse their own unique spiritual lifestyle.

Fisher (1998) reviewed numerous works within the psychological literature and found that spirituality frequently possesses four component domains. The personal domain is described as having a sense of identity, pursuing ventures that one finds meaningful, and achieving one's purpose in life. The communal domain consists of experiencing rich interpersonal relationships with others. Possessing a reverence for nature and one's surroundings entails the third domain, the environmental domain. The final domain, the transcendent domain, is comprised of experiencing a relationship with a force, perhaps supernatural, such as God or a higher power. Fisher contended that a spiritual health contributes to one's overall health and past literature has produced empirical evidence on numerous occasions that greater levels of spirituality in one's life beneficially impacts one's mental health in particular (e.g., Mofidi et al., 2007). Fisher would specifically define the term spiritual harmony as the extent that one fulfills their spiritual ideals. For example, one might believe that an important component of their personalized form of spirituality might be to worship a higher power, but if such a person

rarely engaged in this worship then they would be experiencing little spiritual harmony in this specific area of their spiritual life.

A major limitation of previous works was that they frequently used measures of spirituality that suffered from construct validity issues (i.e., whether they truly separated the measurement of spirituality and mental health from each other is debatable), and many of these studies used spirituality measures that reflected Judeo-Christian doctrines (e.g., Underwood & Teresi, 2002) and were thus not necessarily appropriate for use with secular persons or adherents to religious ideologies outside of the Abrahamic religions. The current study used a spiritual harmony measure that was applicable to a wider diversity of ideologies with the purpose of exploring whether spiritual harmony was related to one's mental health for both religious and secular participants.

**Findings, Interpretations, and Future Research.** Perhaps the most notable finding of the current study was the relationship between spiritual harmony and mental health. Hypotheses 3a and 3b speculated that for religious and secular persons spiritual harmony would be positively related to their mental health, respectively. Spiritual harmony was measured by having participants quantify their level of beliefs across an assortment of spiritual concepts to indicate whether they were important for their spiritual health or not, and then quantify the extent their actual behaviors adhered to those beliefs based on the level they endorsed them. By analyzing the discrepancy between one's spiritual health ideals and their actual spiritual behaviors their spiritual harmony became apparent. Importantly, it was found that this spiritual harmony construct had the strongest effect, a large effect, on one's mental health. The strength of this association was more prominent than any other variable measured in this study: income, education,



age, religious/spiritual coping, theistic/atheistic certainty, and even social support satisfaction. Social support satisfaction was the variable that was most predictive of one's mental health with a medium to large sized effect in every analysis until spiritual harmony was included in the multivariate models, which itself then became the frontrunner in the positive predictive relationship by a substantial margin over any other variable because spiritual harmony remained the only large sized effect in the final exploratory model (social support satisfaction downgraded to a medium sized effect when spiritual harmony was introduced in the models).

What else was remarkable about this finding with spiritual harmony was that this large effect on mental health was evident for both religious and secular participants. The magnitude of this effect was found to be similar between both the religious and secular participants as well, suggesting that spiritual harmony is a relevant predictor regardless of what individual elements consist within a person's ideology and belief tenets. Granted, the spiritual harmony construct had differently weighted components for religious participants versus secular participants (i.e., a different inclusion of transcendent spiritual practices), but nonetheless this general notion of being in a state of living up to one's spiritual ideals came out as prominently related to one's mental health. Based on the factor loadings between groups, it was evident that secular participants had a noticeably different depiction of the role that transcendent spirituality (e.g., developing a relationship with a higher power) had in their life than the religious participants did, but the idea of living in a consistent way with one's spiritual health values was the crucial factor underlying the relationship as a whole. The results of this study suggested that people can hold a diversity of beliefs, but the content of those beliefs may be somewhat

arbitrary as it relates to impacting one's mental health. Perhaps what is important for one's health is how a person lives up to those beliefs in their day to day life. This relationship was a substantial finding that has never been demonstrated this clearly in previous religious and spirituality literature with diverse samples.

Given this large effect, spiritual harmony was potentially the most effective determinant of emotional regulation compared to all the other predictor variables in this study. Outperforming religious/spiritual coping as well as belief strength constructs, spiritual harmony emerged as the condition that was most predictive of healthier emotional regulation. Possible explanations for this effect were that spiritual harmony was a more precise indicator of more adaptive responses to a person's underlying death anxiety, if one were to consider a terror management theoretical (TMT) perspective. TMT describes the stimuli and reactions that surround one's emotional conflict that one experiences when they are aware of their inevitable demise. As Vail et al. (2010) detailed in their discussion of TMT, engaging in spiritual or religious actions provides one with a sense of security or psychological appeasement from the unease that knowledge of our mortality instills within each person.

The spiritual harmony effect was not surprising when one considers the psychological flexibility model (Levin, Hildebrandt, Lillis, & Hayes, 2012), which is the basis for acceptance and commitment therapy (ACT). ACT is a form of psychotherapy that partly focuses on committing oneself to complete value-based behaviors. Trials of ACT therapy that specifically focused on commitment to values have evidenced beneficial effects in reducing one's psychological distress (Levin et al., 2012), thus improving their mental health. With this framework in mind, future research should

verify whether the beneficial effects of spiritual harmony are distinctly different from completing value-based behaviors in general. Those who enact behaviors that are consistent with their values would be expected to have more favorable mental health levels, but clarifying that spiritual values are playing a unique role with one's mental health would give more credibility to the claim that diverse forms of spirituality are strongly related to mental health, as the current findings indicated.

As noted previously, research has shown that the relationship between religiousness and mental health was stronger and more positive when religiousness was measured in the form of a personal/intrinsic religiousness type as opposed to an extrinsic religiousness type (Hackney & Sanders, 2003; Ventis, 1995). It was speculated in the current paper that perhaps there was an overlap between personal/intrinsic religiousness and spirituality, given that spirituality's definitions often declare it as something highly personal (Hood et al., 2009). Support for an overlap between these two constructs manifested in the current study, but it is also worth noting that the magnitude of the effect of spiritual harmony on mental health exceeded even the strongest associations that personal/intrinsic religiousness had with mental health in previous studies. The differences in magnitude between these variables suggest that they are not complete proxies for one another. The correlation effect sizes in the current study showed that spiritual harmony's relationship with each of the mental health variables exceeded the correlation effect size found in Hackney and Sanders' meta-analysis which was a small sized effect, while the current study possessed mostly medium sized effects across the six mental health variables individually (altruism being the only exception). Overall, the data suggested that the most linear relationship found in the current study was the

relationship between spiritual harmony and mental health. In terms of descriptiveness and predictive usefulness, the spiritual harmony finding overshadowed the previously described linear association between religiousness and mental health as well as the curvilinear relationship between belief strength and mental health.

The relevance of the distinctive spiritual ideals between that of religious and secular participants is reminiscent of the discussion of Spilka (1993) who referred to spirituality as a “fuzzy” concept because of its obscurity and diversified usage. As the current study showed, participants, such as atheists and theists, who obviously have vastly differing perspectives on what spirituality means in their lives, still can relate to their spiritual ideals in adaptive or maladaptive ways and experience the same advantageous or disadvantageous consequences for their health regardless of the subjective content of their spiritual ideals. The current study’s use of differing ideological perspectives only supported the notion that creating a consistent and agreed upon usage for the term spirituality is difficult because, as Zinnbauer et al. (1997) explained, spirituality is idiosyncratic and highly personalized. The findings of the current study underscored the importance of using innovative measurement methods like the SHALOM to measure spirituality. While this measure was not perfect as to encompass all forms of spiritual diversity, it was more fitting compared to current measures in the field in regards to encapsulating respondent diversity and perhaps more measures should be created in a similar fashion that include a dual response system of comparing the endorsement of specific spiritual ideals with the extent one exhibits the corresponding behaviors and actions. Zinnbauer, Pargament, and Scott (1999) detailed that psychologists struggle to conduct research with an agreed upon meaning for the

spirituality construct because they simultaneously strive to remain considerate of the pluralism that exists regarding spirituality's definition. The use of the discrepancy scoring system within the SHALOM not only allowed for one to be respectful to this pluralism, but it also created the opportunity for a research avenue that can conceivably investigate how assorted social groups are quantitatively and conceptually defining their idea of spirituality. As a result, measures of this type can provide an arguably acceptable balance considerate of the tension between these pluralistic and definitional concerns. The literature review of the current paper gave several examples of how the past measurements of spirituality emphasized theism and/or Christianity despite the use of these scales with diverse populations. In the future, spirituality will likely remain considered as a personal and subjective construct as it has in recent decades, and psychologists should consider accounting for this subjective measurement by allowing participants to define their spiritual ideals and then indicate how well they live up to those standards.

The current study also provided support to previous findings that secular persons are spiritual (e.g., Chappel, 1990). Likewise, this also supported the notion that spirituality can operate outside of the confines of religion, just as Zinnbauer et al.'s (1997) sample demonstrated. Future research could benefit the field's understanding and conceptualizations by quantitatively exploring how secular spirituality and religious spirituality overlapped and where they diverged, as Chiu (2000) suggested. Then, parsing this out even further by examining how groups within secularity and religion differentiate could expand the field's understanding of spirituality even further. Fisher's (1998) definitional model of spiritual health was mostly supported in the current data, but

there appeared to be an incongruence of Fisher's model with the way secular participants endorsed transcendent spirituality in particular. The personal, communal, and environmental constructs coalesced strongly to form the spiritual health construct but the transcendent subconstruct did not. Not surprisingly, this subconstruct in particular may only be relevant for those who actively believe in God or a similar divine entity. If one considers secular spirituality specifically, then the recommendation of Kapuscinski and Masters (2010) may not stand, as these authors specifically recommended all spirituality scales include a transcendence component to help differentiate spirituality from other constructs. Although, Kapuscinski and Masters made another suggestion that does indeed hold up when considering the results of the current study: research that uses a spirituality measure that includes both inner experiences and overt behaviors may more clearly capture extant relationships with other constructs. The SHALOM's spiritual ideal and lived experience dual response system helped capture both the internal facets and the behavioral components of spirituality which may have helped elucidate the spiritual construct's relationship with other variables. Future research could verify whether spirituality measurement that includes both internal and behavioral facets provides incremental validity over spirituality measures that are only limited to one or the other to test Kapuscinski and Masters' assertion. Regardless, the current study provided evidence that a multifaceted spirituality measure captures a range of association strengths between variables.

**Limitations.** Although the measurement of spiritual harmony achieved a respectable level of applicability to diverse social groups, its measurement could have been heightened more if other distinct belief components were introduced and

highlighted further. Ideally speaking, participants would have been given an option to endorse pantheistic, polytheistic, and deistic spiritual beliefs as part of their spiritual ideals, to name a few. Unfortunately, no spirituality measure uses a dual response system and includes items with such content in conjunction with the traditionally used theistic and Judeo-Christian reflective measures. The measurement of spirituality harmony could have perhaps been more precise had participants been given the opportunity to endorse or exclude these characteristics as part of their beliefs about spiritual health.

Similar to the limitation of the measurement of religious/spiritual coping, understanding the facets of each person's spiritual harmony and how they related to one's mental health may have been more clear if qualitative methods were also used. Quantitative measures achieved a satisfactory level of applicability for the diverse sample, but the items of the quantitative measures are limited in their ability to illuminate the crucial mechanisms that link spiritual harmony with more favorable mental health. The inclusion of more mixed methods practices may help achieve further insights in future research.

### **General Strengths, Limitations, and Future Considerations**

The sample of the current study was simultaneously a strength and a limitation. The inclusion of agnostic, atheistic, Buddhist, spiritual nonreligious, and Jewish participants was a strength because they are understudied in the psychology of religion and spirituality field due to its Christian-centric history (Hood et al., 2009). Unfortunately, due to Muslim, Hindu, Taoist, Pagan, and several other ideologies completing the study in such small numbers, the current findings cannot safely be

attributed to them. Future research would benefit from achieving even greater diversity than the current study so that the nuanced relationships between beliefs, coping, spirituality, and mental health are highlighted and potential differences can be learned about further.

The data collected for this study was gathered at a single time point and was based on self-reports. Longitudinal research designs and methodologies that go beyond self-reports could help determine whether the relationship of these variables stays consistent. Longitudinal methodologies in particular could allow a closer but still imperfect approximation of causal relationships. Going beyond self-report data, such as using other sources of data conjunctively (e.g., observer ratings of participants' mental health) in future studies may provide more clarity on the actual levels of mental health by reducing the error that is sometimes associated with self-report data.

The correlational nature of the current study limited the full scientific understanding of how each of the study's variables truly related to each other. For example, based on this study, it was tempting to say that living congruently with one's spiritual values will subsequently improve one's health; however, it is also plausible that the current study found that people who are initially healthy are just more likely have the capacity to live up to their spiritual value standards. Thus, the directionality of the effects, or whether other outside variables were pertinently involved, could not be determined with the design of this study.

The general aim of this study was to be able to make conclusions about how belief strength, coping, and spirituality related to a general construct of mental health.



The inclusion of six mental health variables was enacted to be able to achieve this, but, unfortunately, the exploratory research question and each of the hypotheses (except for 1a and 1b) used a composite latent construct of mental health that only included four of these mental health variables (hope, positive affect, life satisfaction, and gratitude). The exclusion of the altruism and negative affect constructs was necessary due to statistical reasons for Hypotheses 2a, 2b, 3a, 3b, and the exploratory research question, but ideal conditions for interpretation would have allowed for the inclusion of all six of the constructs. Also, in consideration that Hypothesis 1b illustrated how each of the mental health variables shared unique relationships with the groups being compared, it would be astute for researchers to use multiple conceptualizations of mental health and be vigilant for differential effects between groups in future studies.

Religious and secular group comparisons, the crux of this study, could have possibly been performed more accurately if more of the influences on the variability in mental health could have been isolated. In particular, it may have been revelatory if the effects of Christian privilege had been accounted for. Works such as Blumenfield (2006) and Schlosser (2003) both outlined how Christians in the United States are at a considerable advantage in acquiring numerous societal benefits over minority religious groups and secular groups. This is especially pertinent because the current study was predominantly made up of people from the United States. Access to these societal benefits may have accounted for the variability of mental health. Societal benefits include many facets, but a few examples relevant to the concept of privilege for the current study include such matters as possessing a feeling of acceptance or appreciation within society at large, regularly seeing people of one's own ideological identity status

depicted positively in the media, and being able to share one's beliefs or opinions without fear of any repercussions when around others. Recent research has highlighted how secular people are the target of discrimination in the USA, and the perpetrators of these acts, at least in one experimental situation, tended to be Christian (Swan & Heesacker, 2012). Only tentative conclusions should be made based off Swan and Heesacker's study because their sample was predominately Christian at the outset. Alternatively, Hammer, Cragun, Hwan, and Smith (2012) conducted a correlational study that questioned atheists about their experiences of discrimination that transpired in the last five years only. Despite this limited time frame, 41% reported experiencing acts that included slander, coercion, social ostracism, denial of goods and services, and hate crimes, all due to their identification as atheist. Hammer et al. declared that experiences of discrimination should be a considered variable whenever religion/spirituality and health association research is being performed. Some of the subtle mental health differences between the religious and secular participants in the current study might have lessened or even disappeared if the impact of discrimination was controlled for. This could also be valid for the religious participants, who, despite being the majority group in the United States, still may experience stigmatization and discrimination themselves. The inclusion of discrimination as a variable in future analyses is warranted especially when numerous studies have shown that discrimination negatively impacts mental health, even when other class distinctions are controlled for (e.g., Kessler, Mickelson, & Williams, 1999). The inclusion of discrimination is especially pertinent when one also considers that atheists are viewed as potentially the single most unaccepted and stigmatized group in the United States both publicly and privately. Edgell, Gerteis, and Hartmann (2006) found

that atheists were ranked number one on lists of “This group does not at all agree with my vision of American society” and “I would disapprove if my child wanted to marry a member of this group” while Muslims, despite also being frequent targets of discrimination, appeared in a distant second on both lists. Notions of privilege and discrimination as they pertain to secular groups and non-Christian religious groups should be accounted for in future studies regarding mental health comparisons between groups.

### **A Final Thought**

One of the most notable implications of the current study is that the impaired mental health stigma against secular participants (e.g., Schumaker, 1992) is at the very least an exaggeration. Grounds for declaring that there is a substantial mental health disparity between religious and secular groups was not supported in the current study. An implication that can be drawn from the results of this study was that a vital component of one’s mental health is their ability to live in accordance with their spiritual health values, whatever those may be. General health initiatives and service providers may want to consider encouraging spiritual living in particular. Applicable services could include encouraging children’s healthy spiritual behaviors in schools, integrating spiritual components into psychotherapy, increasing the well-being of patients in hospitals, or disseminating healthy living information via various media sources to consumers. Specifically, any of these communication or interactive avenues that aim to positively impact the health of their respective consumers could devote time to facilitating the reflection of one’s spiritual values. As follows, teaching and imploring these service recipients to enact behaviors in their daily life that are congruent with their

personally decided and reflected upon spiritual health values could be the impetus for healthier living. Such a health service advocacy process would inherently be cross-culturally considerate, because it encourages people to discover their own spiritual values, which then adds to the widespread and personalized applicability. Numerous societal venues, such as schools and medical centers, teach patrons how to live a physically healthy life and a mentally healthy life. If continued research supports the current findings, perhaps it would be time for society to begin emphatically encouraging people to discover and pursue action that is congruent with their personalized definitions of spiritual health.

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## APPENDICES

### IRB Approval

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## CURRICULUM VITA

Jonathan Tad Moore

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### Education

- 2009-present                    **University of Louisville - Louisville, KY**  
Doctor of Philosophy Candidate, Counseling Psychology  
***Dissertation:*** Dogmatism, coping, and spirituality:  
Predicting mental health among the religious and the  
secular.  
Final defense completed October 28<sup>th</sup>, 2013  
Chair: Dr. Mark Leach  
Anticipated degree completion on July 24<sup>th</sup>, 2014
- 2012                                **University of Louisville - Louisville, KY**  
Master of Education Degree, Counseling Psychology
- 2007                                **The University of Texas at Dallas - Richardson, TX**  
Bachelor of Arts Degree, Psychology  
Honors: *cum laude*

### Clinical Experience

- 2013-present                    **Cincinnati VA Medical Center - Cincinnati, OH**  
APA Accredited Pre-doctoral Internship  
***Fall Major Rotation: Domiciliary Care for Homeless  
Veterans program.*** Services included individual and group  
therapy addictions treatment, psychoeducation, personality  
assessment, and program development within a  
biopsychosocial rehabilitation framework as part of a  
multidisciplinary team at a 60-bed unit for Veterans with  
chronic substance use issues.  
Supervisors: Drs. Brian Zinnbauer and Richard Seim  
***Spring Major Rotation: Substance Dependence Program,  
Residential Rehabilitation Services.*** Anticipated services  
to be provided on this unit include group psychotherapy



with ACT, process, and experiential formats taught through an apprenticeship model for chemically dependent clients who commonly presented with mood and posttraumatic stress disorders.

Supervisors: Drs. Teri Bolte and Alyssa Lieb

***Minor Rotation: Acute Inpatient Psychiatric unit and Partial Hospitalization Program.*** Year-round rotation participating in a multidisciplinary treatment team for SMI and cognitive disorder patients. Assessment services were emphasized and process group therapy sessions were conducted with both inpatient and partial participants. Outpatient individual therapy for partial program completers with PTSD was also a focus.

Supervisor: Dr. Connie Boehner

2012-2013

**Bellarmine University Counseling Center - Louisville, KY**

Practicum experience consisting of individuals and couples therapy for a diverse student population with various presenting problems. Outreach activity was emphasized and included leading Safe Zone Trainings in LGBT issues, classroom stress education seminars, professional development talks with undergraduates, speaking at leadership development conferences, and consulting with Student Affairs to conduct a campus-wide diversity survey.

Supervisor: Dr. Gary Petiprin

2012

**Louisville VA Medical Center - Louisville, KY**

Practicum experience devoted solely to psychological assessments of Veterans. Neuropsychology, intelligence, and personality testing were emphasized. Referral questions were primarily devoted to neuropsychological impairment, learning disorder, and ADHD related concerns. Integrative reports were created and feedback sessions were conducted.

Supervisor: Dr. Jeanne Bennett

2011-2012

**The Brook Hospital - Louisville, KY**

Practicum experience working with severe mental illness and substance abuse issues at a private psychiatric hospital. Facilitated relapse prevention and process-oriented group therapy as well as intakes and family sessions for the adult acute inpatient unit. Weekly group therapy sessions were also led on the long term unit for adolescent males with behavioral issues.

Supervisor: Dr. Jon Rainbow

- 2010-2011                    **University of Louisville Counseling Center - Louisville, KY**  
 Practicum experience consisting of individuals and couples therapy for a diverse student population with various presenting problems. Outreach was emphasized and included suicide prevention, Take Back the Night, and body image/eating disorder prevention.  
 Supervisors: Drs. Terri White and Joanna Morse
- 2010                            **Communicare - Brandenburg, KY**  
 Practicum experience at a community mental health agency in a rural setting. Individual therapy for adults and group therapy for elementary age children who were at-risk to develop social and emotional developmental issues was performed.  
 Supervisor: Dr. Jim Thompson
- Work Experience**
- 2013-present                **Statistical Consultant - Self-Employed - Cincinnati, OH**  
 Fee-for-service relationships devoted to aiding researchers in refining hypotheses, selecting appropriate statistical analyses, writing results sections for manuscripts and dissertations, and providing guidance on interpretation of findings.
- 2011-2012                    **Instructor - Department of Teaching and Learning - University of Louisville - Louisville, KY**  
 Sole instructor for an undergraduate course on human development for students enrolled in teacher preparation programs.  
 Supervisor: Dr. Mark Leach
- 2007-2009                    **Clinic Team Leader - Adapt of Texas - Dallas, TX**  
 Full-time management position overseeing a team of medical and mental health professionals. Psychologically screened and attended symptoms, created treatment plans, and coordinated community services to augment rehabilitation and therapeutic intervention of low-income/homeless adults with serious mental illness.  
 Supervisor: Duyn Ferguson

## Publications

- Moore, J.** & Owen, J. (in press). Assessing outcomes: Practical methods and evidence. *Journal of College Counseling*.
- Budge, S.B., **Moore, J.T.**, Del Re, A.C., Wampold, B.E., Baardseth, T.P., & Nienhuis, J.B. (2013). The effectiveness of evidence-based treatments for personality disorders when comparing treatment-as-usual and bona fide treatments. *Clinical Psychology Review*, 33, 1057-1066. <http://dx.doi.org/10.1016/j.cpr.2013.08.003>
- Owen, J., Fincham, F.D., & **Moore, J.** (2011). Short term prospective study of hooking up among college students. *Archives of Sexual Behavior*, 40, 331-340. <http://dx.doi.org/10.1007/s10508-010-9697-x>

## Current Projects

- Moore, J.** & Leach, M. *Dogmatism and spirituality: Predicting mental health among the religious and secular*. Manuscript in preparation.
- Moore, J.** *A quantitative exploration of secular groups' definitions of spiritual health*. Manuscript in preparation.

## Professional Presentations

- Budge, S.L., **Moore, J.**, Neinhuis, J., Baarsdeth, T., & Wampold, B.E. (2012, June). *The relative efficacy of bona-fide psychological treatments for personality disorders: A meta-analysis of direct comparisons*. Paper presented at the Annual Meeting for the Society of Psychotherapy Research, Virginia Beach, VA.
- Manthos, M., **Moore, J.**, & Quirk, K. (2011, April). Understanding clients' sexual self-schema: The role of SSS and hooking up. In J. Owen (Discussant), *No strings attached: What counselors need to know about friends with benefits relationships and hooking up experiences*. Symposium conducted at the Great Lakes Counseling Conference, Bloomington, IN.
- Moore, J.**, Quirk, K., & Manthos, M. (2011, April). Can hooking up be good for you? In J. Owen (Discussant), *No strings attached: What counselors need to know about friends with benefits relationships and hooking up experiences*. Symposium conducted at the Great Lakes Counseling Conference, Bloomington, IN.
- Quirk, K., Manthos, M., & **Moore, J.** (2011, April). No strings attached: Friends with benefits & deception. In J. Owen (Discussant), *No strings attached: What counselors need to know about friends with benefits relationships and hooking up experiences*. Symposium conducted at the Great Lakes Counseling Conference, Bloomington, IN.

### **Professional Workshops & Trainings**

- 08/2013-ongoing      Acceptance and Commitment Therapy Mini Lecture Series and Consultation Calls - Monthly VA teleconferences with various ACT national trainers
- 10/2013                Motivational Interviewing Training- John Steinberg & Teri Bolte - Cincinnati, OH - Cincinnati VAMC
- 10/2013                Regional Cognitive Processing Therapy Training Workshop - Jennifer Lewis, Kerry Renner & Carrie Robinson - Columbus, OH - Chalmers P. Wylie VA Ambulatory Care Center
- 08/2013                Matrix Model Treatment for Substance Dependence Training - Donna Johnson - Cincinnati, OH - Cincinnati VAMC

### **Professional Membership & Additional Service**

- 2008-present            Affiliate - American Psychological Association
- 2013-present            Affiliate - Association of VA Psychologist Leaders
- 2013-present            Student Member - Association for Contextual Behavioral Science
- 2009-2012              **Graduate Assistantship - Department of Educational and Counseling Psychology - U of Louisville - Louisville, KY**  
Contributed to research related activities for scholarly publication, taught undergraduate course sections, assisted in practicum placement process.  
Supervisors: Drs. Jesse Owen, Mark Leach, and Stephanie Budge.
- 2010-2011              **Ad Hoc Reviewer** for *Psychology of Religion and Spirituality*  
Supervisor: Dr. Mark Leach
- 2006-2007              **Research Assistantship - School of Behavioral and Brain Sciences - University of Texas at Dallas - Richardson, TX**  
Observational coder and proctor for a longitudinal multi-method study on social aggression among youth.



- 10/2010                      Take Back the Night - University of Louisville. Staffed table to explain services of provided by the counseling center
- 08/2010                      “Move In Days” - University of Louisville. Assisted Housing and Residential Life staff with moving new students into residential halls