Religiosity and Depression: A Ten-Year Follow-up of

Offspring at High and Low Risk for Depression

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ABSTRACT

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One of the most thoroughly researched areas of mental illness in the context of its

association with religiosity is depression. The thrust of studies published over the last

century found religious/spiritual factors to be generally associated with lower rates of

depression. The majority of studies on religion and depression have been cross-sectional.

The primary aims of this study are to investigate the relationship between religiosity and

depression longitudinally, utilizing a 10-year follow-up, and to explore the potential

differential impact of religiosity on the prevalence of depression in those at high versus

low risk for depression. Results suggest that 1) prospectively, a personal importance of

religion is protective against MDD over a 10-year period; 2) prospectively, there exists a

differential effect of religious belief on MDD in individuals at high versus low risk for

depression; 3) prospectively, the protective effect of religious/spiritual importance against

MDD is exclusive to individuals at high risk for depression based on parental MDD

status; 4) Time 10 Catholicism is protective against MDD cross-sectionally 5) The

protective effect of Catholicism may be more prevalent in individuals at low risk for

depression than in individuals at high risk for depression; 5) cross-sectionally, there

exists a differential impact of religious attendance on the prevalence of MDD in those at

high risk versus those at low risk for depression at Time 10: for those at high risk for

depression, religious attendance is associated with increased rates of MDD; 6) cross-sectionally, after controlling for social support there exists a differential impact of religious attendance on MDD in those at high versus low risk for depression: in individuals at high risk for depression, after controlling for social functioning, religious importance becomes a risk factor for MDD.

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DEDICATION

I dedicate this dissertation to my parents, Marcia and Dewitt Sage, each of whom inspired

me to become a psychologist. Through their genuineness, openness, and wisdom my

parents have led me to recognize the inexpressible value in being a good and kind human

being. I thank them for being themselves and for showing me through example the

importance of following my true interests and passions. I thank them beyond measure for

allowing me, with unyielding love and support, to be myself.

INTRODUCTION

Psychologists' interest in studying religion and its impact on psychological and emotional well-being has remained persistent, albeit intermittent, over time. In 1902, the psychologist and philosopher William James emphasized the value of exploring the phenomenon of religious experience in the study of human nature. James spoke about the validity of spiritual experience, within which exists possibilities for healing particularly in times of suffering (1936, p.19). James, who was known to have a propensity toward depression, studied the field of religion and psychology as a researcher, investigating case studies of people who reported having religious or mystical awakenings. Nowadays, we might refer to his study of religion as a study of spirituality or transcendentalism, as his work focused on personal experience rather than institutionalized religion: "Religion, therefore, as I now ask you arbitrarily to take it shall mean for us the feelings, acts, and experiences, of individual men in their solitude, so far as they apprehend themselves to stand in relation to what they consider divine (James, p. 39). James' classic work *The Varieties of Religious Experience*, an interdisciplinary work of psychology, religion, and philosophy, could be regarded as the inception of the academic study of the role of religious experience in mental health. Notably, William Wilson, the founder of Alcoholics Anonymous, identified *The Varieties* as a decisive source of clarification for him as he began the transformative process of his recovery (Hart, 2008).

In the last half-century, research has moved toward fulfilling the expedition James began; the last decade in particular has seen a surge of quantitative studies on religiosity, which refers broadly to the various aspects of religious activity, dedication, and belief. Studies have consistently demonstrated that a large portion of the population

turn to both spirituality and religion to get through difficult times and to enrich their lives

(Moreira-Almeida, Neto, & Koenig, 2006; Paloutzian & Park, 2006; Pargament &

Saunders, 2007). Furthermore, the majority of research spanning the 20th century has

shown that after controlling for demographic and psychological variables, religiosity and

spirituality are often associated with improvements in health and well-being and are sited

among the foremost resources people turn to for coping (Cole & Pargament, 1999;

Koenig, McCullough, & Larson, 2001; Pargament & Saunders, 2007; Pargament, Smith,

Koenig, & Perez, 1998; McCullough & Larson, 1999; Miller & Thoresen, 2003; Smith,

McCullough, & Poll, 2003; Wink & Dillon, 2008).

One of the most thoroughly researched areas of mental illness in the context of its

association with religiosity is depression. Literature reviews reveal that studies published

over the last century found religious/spiritual factors to be generally associated with

lower rates of depression (Koenig, 2001; Larson & Larson, 2003; Smith, McCullough, &

Poll, 2003). The majority of studies on religion and depression have been cross-sectional,

raising a host of validity questions. To our knowledge, no study to date has looked at the

role of religiosity in mental health in individuals at high risk for depression. Now that the

relationship between depression and religiosity has been established in the literature,

there is a call for researchers to move "to the next generation of studies that will aid

understanding the psychological and social processes that give rise to this modest but

robust association" (Smith, McCullough, & Poll, 2003, p. 631). Additionally, researchers

state that "to study developmental explanations, longitudinal studies—including studies

with very long follow-up periods—would be invaluable" (Smith, McCullough, & Poll,

2003, p. 629). The primary aims of this study are to investigate the relationship between

religiosity and depression longitudinally, utilizing a 10-year follow-up, and to explore the potential differential impact of religiosity on the prevalence of depression in those at high versus low risk for depression.

<p align="center">Individuals at High Risk for Depression</p>

The population of interest for the current study is of particular importance considering the prominence of depressive disorders in the world. Depression is the fourth-leading cause of disability in people between the ages of 15 – 44 and when not accounting for premature mortality, it is the number one cause of disability for this age group (World Health Org., 2001). A 2010 review of the literature revealed the lifetime prevalence of major depressive disorder (MDD) in the United States of America, capturing both recurrence of past episodes and first episodes (incidence), is estimated at 16.2% (Hardeveld, Spijker, De Graaf, Nolen, & Beekman, 2010). This 2010 literature review, which ultimately included 27 studies of prevalence and predictors of MDD in the adult population, found the percentage of recurrence in the specialized mental health care system was 85% after 15 years (Hardeveld et al., 2010). The review found the two main predictors of recurrence were number of previous episodes and subclinical residual symptoms after recovery from the previous episode; the review also found that while a family history of MDD was associated with recurrence in one study, it was not associated with recurrence in various other studies (Hardeveld et al., 2010).

A 2010 review of the literature on prevention of depression, which has only recently begun to be studied scrupulously, concluded that for both young and older adults there is no definitive risk factor for depression (Beekman, Smit, Stek, Reynolds, & Cuijpers, 2010). Beekman et al. discuss the benefit of utilizing different combinations of

risk factors for depression so that high risk subgroups can be studied a priori (2010). The prevention literature indicates that targeting subgroups with research and treatment who are at high risk for depression is likely more advantageous than implementing universal preventive approaches, especially when considering that a risk reduction ranging between 25 and 50% has been found in recent studies that target individuals at high a priori risk for depression (Beekman, Smit, Stek, Reynolds, & Cuijpers, 2010).

One way of targeting subgroups is through identifying samples based upon risk factors. One such risk factor for developing depression is having one or more biological parent with depression. Children of parents with unipolar-depression are at greater risk for having serious psychological problems as compared to children of parents without depression (Beardslee, Bemporad, Kellar, and Klerman, 1983; Downey & Coyne, 1990; Weissman, Fendrich, Warner, & Wickramaratne, 1992; Weissman et al., 1987). Specifically, offspring of one or more depressed parent were found to have higher rates of MDD and anxiety disorders when compared to offspring of nondepressed parents (Weissman et al., 1987). Weissman et al., (1987) found that for offspring of one or more depressed parent, parental diagnosis of MDD was more important than family risk factors, such as parental divorce, affectionless control, and low family cohesion, in predicting MDD in those children. Weissman et al., (1987), also demonstrated in a 2-year longitudinal study of 174 offspring of depressed and nondepressed parents, all suicide attempts and incident cases of MDD and anxiety disorders occurred in children of depressed parents. In a later follow-up of the above sample, Weissman et al., (2006), found that offspring of depressed as compared with non-depressed parents had a threefold

higher risk of developing both anxiety and mood disorders and that the onset of MDD was earlier in offspring of depressed parents than for offspring of nondepressed parents.

Offspring of depressed parents have also been shown to be at increased risk for social and cognitive deficits and adjustment disorders (Goodman, 1987). Studies have shown that children of depressed parents have an increased risk not only for psychiatric problems but for medical disorders (Downey & Coyne, 1990; Weissman et al., 2006). Weissman et al. (2006) showed that parental depression was associated with increased risk for alcohol and substance dependence and that at an average of 35 years, the children of depressed parents report higher rates of medical illnesses than those of nondepressed parents. These findings echo the results of numerous studies that reveal that the school-aged offspring of depressed parents show higher prevalence of both internalizing and externalizing symptoms than children in control groups (Downey & Coyne, 1990; Hammen, Gordon et al., 1987).

Studies show that genetic causes can account for the psychopathology found in the offspring of depressed parents to *some extent* (Allen, 1976; Cadoret, O'Gorman, Heywood, & Troughton, 1985, Downey & Coyne, 1990). A reasonable hypothesis following such findings is that the impact of parental depression on offspring psychological health and level of functioning has to do with an interaction of genetic and biological vulnerabilities with environmental influences.

Due to the considerable evidence indicating the children of one or more depressed parent are at greater risk for developing MDD, for the current study we use the term "high risk" to delineate the offspring of one or more depressed parents, while "low risk" refers to the children of non-depressed parents. We seek to explore the association of

religiosity and depression in the particularly important group of individuals at high risk for depression.

<div align="center">Spirituality and Religiosity</div>

In exploring the relationship between religiosity and depression, it is important to discuss the concept of religiosity as it appears in the health literature to date. Despite a lively and enduring debate in the literature, there remains little consensus about the distinction between the terms "religiosity" or "religiousness" and "spirituality." In the literature on religion, spirituality, and mental health, the terms spirituality and religion/religiousness/religiosity are commonly used interchangeably. Spirituality is generally understood as the thoughts, feelings, and behaviors in which an individual engages in search of a relationship with the sacred; religiousness is generally defined as those spiritual thoughts, feelings, and behaviors that are specifically related to a formally organized and identifiable religion" (Pargament & Saunders, 2007). This distinction is echoed by Miller and Thoresen (2003): In one sense, religion is an institutional (and thus primarily material) phenomenon. Though often centrally concerned with spirituality, religions are social entities or institutions, and unlike spirituality, they are defined by their boundaries. Religions are differentiated by particular beliefs and practices, requirements of membership, and modes of social organization. What is spiritual or transcendent may be a central interest and focus, but religions are also characterized by other nonspiritual concerns and goals (e.g., cultural, economic, political, social). Thus, religion can be seen as fundamentally a social phenomenon, whereas spirituality (like health and personality) is usually understood at the level of the individual within specific

contexts (Thoresen, 1998). Viewed in this way, the field of religion is to spirituality as the field of medicine is to health.

In discussing the overlap between these two constructs, authors posit that one may express her spirituality in a religious context (Allport, 1960; Genia, 1993; Westgate, 1996). For the purpose of the present study, religiosity and spirituality are conceptualized as related but distinct concepts. We use the term 'religiosity,' which is a broad term that captures the various aspects of religious activity, dedication, and belief but discuss the potential to generalize findings to spiritual belief and practice (Button, Stallings, Rhee, Corley, & Hewitt, 2010).

In beginning to unpack the mediating underpinnings of the effect of religious or spiritual involvement on mental health and well-being, researchers have made crucial, albeit preliminary steps in delineating what aspects of religion or spirituality are in fact mutative. Is it the act of religious involvement, such as attending services, that attenuates depressive symptomatology or is a genuine and personal belief or sense of faith required to generate and sustain the potential impact of religious or spiritual involvement?

Intrinsic and Extrinsic Religiosity

Allport's (1967) delineation of intrinsically motivated religiousness versus extrinsically motivated religiousness has had a potent impact on the empirical research on the psychology of religion. Allport (1967), whose Religious Orientation Scale (ROS) has been widely used in studies of psychology and religion, described the intrinsic orientation as having to do with an internalized and personally held belief in religion or spirituality itself above and beyond the psychosocial factors that might prove useful for mental health (such as social interaction or distraction). Allport and Ross (1967) state that "the

extrinsically motivated person *uses* his religion, whereas the intrinsically motivated *lives* his religion" (p. 434). Several studies suggest that it is the aspects of religiosity that are related to intrinsic motivation versus extrinsic motivation that are inversely associated with depressive symptomatology (Allport, 1967; Braam et al., 2001; Koenig, Goerge, & Peterson, 1998; Moreira-Almeida, McCullough & Larson, 1999; Smith, McCullough, & Poll, 2003). Larson & Larson (1999) suggest that "valuing one's religious faith as centrally important and actively belonging to a religious group may give a spiritual basis for meaning as well as receiving support from others. Such factors potentially provide hope and caring, which might also aid in protecting against depression" (2003, p. 44).

The major findings of a meta-analysis concerning intrinsic and extrinsic religiousness reveal that a) extrinsic religiousness, defined in this review as "the religion of comfort and social convention, a self-serving, instrumental approach shaped to suit oneself," tends to be positively correlated with 'negatively evaluated characteristics,' and uncorrelated with measures of religious belief and commitment, and b) intrinsic religiousness tends to be uncorrelated with negatively evaluated characteristics (Donahue, 1985, p.400). Burris (1994) found that extrinsic religiousness is positively associated with depression unless in the presence of very high or very low intrinsic religiousness. The thrust of findings to date suggest it is the devotion to religion or spirituality for its own sake that substantiates the inverse correlation between religiosity and depression. The culmination of these findings leads us to hypothesize that religious behavior (i.e. attendance) in the absence of intrinsic belief or faith will be positively correlated or uncorrelated with depression, while intrinsic belief will be inversely correlated with rates of depression.

Measures of Religiosity

An equally lively debate as the one involving conceptualizing religiousness and spirituality revolves around how to measure such nebulous and personal dimensions as one's relationship to whatever they consider sacred. Hill and Pargament (2003) correctly state that most studies examining the relationship between religiosity and health have occurred in the context of other research incentives. In part because studies of religiosity often arise from research on unrelated areas, measures of both spirituality and religiosity are frequently based on global, single-item indices such as religious attendance and denomination (Hill & Pargament, 2003; Koenig, McCullough, & Larson, 2001). Although there is certainly room for discussion as to the limitations of single-item measures of religiosity, Koenig, McCullough and Larson (2001) discuss the relative reliability of such indices, since the measurement errors associated with each individual item tend to cancel each other out when the items are aggregated. Nevertheless, these researchers recommend that different religious aspects be assessed separately in health-related studies and name the three most commonly recognized dimensions as: organizational religious activity, nonorganizational religious activity, and subjective religiousness (e.g. importance of religion) (Koenig, McCullough, & Larson, 2001).

Although global measures of religiosity are most commonly used and have been robust variables in predicting health-related outcomes, the last decade in particular has seen a surge of interest in exploring the complexity involved in the religiosity-health linkage. Researchers have recently begun to explore the distinct features and processes involved in *how* people are religious or spiritual and why this influences mental health. Research has confirmed what is intuitively clear: the religiosity-health linkage involves

multilayered variables including emotional, behavioral, cognitive, social, and physiological dimensions (Hill & Pargament, 2003). Among the more frequently utilized multidimensional measures of religiosity and spirituality are the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), which is a 40-item measure of religiousness and spirituality developed by the Fetzer Institute and the National Institute on Aging Working Group (Fetzer, 2003); a measure of religious coping (the RCOPE), a detailed and broad assessment of religious coping that covers five areas of religious functions including "religious methods of coping to find meaning," "religious methods of coping to gain control," "religious methods of coping to gain comfort and closeness to god," :religious methods of coping to gain intimacy with others and closeness to god," and "religious methods of coping to achieve a life transformation" (Pargament, Koenig, & Perez, 2000, p. 521); and the Religious Orientation Scale (ROS) mentioned earlier, which assessing different aspects of religious motivation (Allport & Ross, 1967).

<center>Religiosity and Depression</center>

A 2001 review of over 630 separate data-based studies of religion and well-being, meaning and purpose, mental health, and psychosocial factors revealed that 120 studies examined the relationship between level of religious involvement and depression, eight of which were clinical trials (Koenig, McCullough, & Larson, 2001). In this 2001 review, 60 of 93 (65%) of the studies revealed a significant positive relationship between at least one aspect of religious involvement and lower rates of depression; 4 reported greater depression among the more religious; 13 studies reported no association; and 16 studies gave mixed findings. Relatively few studies have explored the relationship between religion and depression using a longitudinal design, and generally these have had follow-

ups of not more than one year (Koenig, McCullough, & Larson, 2001; Nasser &

Overholser, 2005; Horowitz & Garber, 2003; Wink, Dillon, & Larson, 2005; Murphy &

Fitchett, 2009; Dew, Goldston, McCall, Kuchibhatla, Schleifer, Triplett, & Koenig, 2010;

Payman & Ryburn, 2010; Perez, Little, & Henrich, 2009; Cruz, Schulz, Pincus, Houck,

Bensasi, & Reynolds, 2009; Krause, 2009). Out of approximately 19 prospective cohort

investigations reviewed in 2001, the majority revealed that greater religious involvement

at baseline predicated lower rates of depression on follow-up (Koenig, McCullough, &

Larson, 2001). When measuring 'organizational religious involvement,' which refers to

participation in public, social, or organizational religious practices, six prospective

studies found a positive association with lower prevalence of depression (Maton, 1989;

Idler & Kasl, 1992; Kennedy, Kelman, Thomas, & Chen, 1996; Koenig, George, &

Peterson, 1998; Musick, Koenig, Hays, & Cohen, 1998; Musick & Strulowitz, 2000).

Musick and Strulowitz (2000) conducted a seven-year prospective study of 8,866

randomly sampled American adults. Formal religious attendance was measured by

attendance at religious services and involvement in synagogue- or church-related social

events, while informal religious involvement was measured by frequency of participation

in different religious groups. Findings revealed that, while cross-sectional assessment did

not indicate significant results, formal religious involvement significantly predicated less

depressive symptoms and depressed affect at the seven-year follow-up for Christians.

Conversely, among Jews, formal religious involvement predicted greater depressive

symptoms and affect at follow-up. Informal religious involvement predicted fewer

depressive symptoms for Jews and greater depressive symptoms in Christians (Musick

and Strulowitz, 2000).

In their review, Koenig, McCullough, and Larson (2001) categorized the aspect of religiosity that refers to private religious activity (for example, private prayer) as "nonorganizational religious activity." Longitudinal studies that assessed this dimension of religiosity pointed to inconsistent results. In a study of medically ill, depressed older adults (*N* = 87), Koenig, George, and Peterson (1998) found that private religious activity was not associated with remission rates. However, a study of 1,902 female twins indicated that personal devotion (including frequency of prayer) was predictive of lower rates of depressive symptoms 5 months later (Kendler, Gardner, & Prescott, 1997).

Longitudinal studies that assessed single-item measures of self-rated religiousness and importance of religion, which Koenig, McCullough, and Larson (2001) call "religious salience," indicated that this subjective measure of religiosity tends to be predictive of lower rates of depression (Rabins, Fitting, Eastham, & Zabora, 1990; Ross, 1990; Braam, Beekman, Deeg, Smit, & Tilburg, 1997; Shafer, 1997). One of these investigations was an international longitudinal study with a one-year follow-up in the Netherlands, which found that elderly people who indicated that "a strong religious faith" was one of the three most important factors in their life had only 38% the odds of *recurrence of depression* in comparison with those who did not ascribe such importance to their religious faith. This association was most prominent among older adults with poor physical health (Braam, Beekman, Deeg, Smit, & Tilburg, 1997).

In a prospective study of 83 psychology undergraduates, Park, Cohen, and Herb (1990) administered six-item intrinsic religiousness and extrinsic religiousness scales at two time points across a two-month period. Findings revealed that greater intrinsic religiousness was associated with lower prevalence of depression over time. In the

aforementioned study of elderly depressed adults, Koenig, George, and Peterson (1998)

found comparable results showing that scores on a 10-item intrinsic religious motivation

scale predicted the speed of remission of depression. A representational longitudinal

study (three-year follow-up) of 2,836 adults from the general population revealed that

while religious attendance was not associated with symptoms of depression, once

demographic and physical health variables were controlled, there was a significant

correlation between religious salience (self-rated religiousness and importance of

religion) and symptoms of depression; individuals who did not identify as religious and

individuals who saw themselves as extremely religious had more frequent symptoms of

depression when compared to those who considered themselves moderately religious

(Schnittker, 2001). Schnittker utilized the single-item measure of subjective importance

of religious or spiritual beliefs to evaluate religious salience and, specifically, to look at

the potential for curvilinear main effects between this aspect of religiosity and

depression. While previous research has found evidence for an inverted U-shape effect,

suggesting clarity and/or confidence in one's beliefs is an important factor in attenuating

depression, Schnittker's findings found the opposite: those with either low or high levels

or religious salience reported more depression than those with moderate levels of

religious salience.

     Of the eight clinical trials reviewed in the 2001 review, five showed that patients

with depression who received religiously oriented interventions recovered more quickly

than those who received non-religiously oriented psychotherapies (Koenig, McCullough,

& Larson).

A comprehensive meta-analysis that reviewed 147 studies ($N = 98{,}975$) found that religiousness reduces vulnerability to depressive symptoms and discussed possible mediators of this association, including substantive psychosocial mechanisms, such as lower substance use, social support, appraisal of life events (cognitive appraisal), and ability to cope with stress (Smith, McCullough, & Poll, 2003). Murphy, Ciarrochi, Piedmont, Cheston, Peyrot, and Fitchett (2000) found that in a study of clinically depressed adults, depressive symptoms were negatively correlated with religious belief after controlling for demographic variables. Echoing findings from earlier mentioned reviews, another review of the literature on religiosity and depression indicates that religious importance predicts lower incidence of depressive symptoms and that religiosity may increase the speed of recovery from depressive disorder (Dein, 2006)..

The protective impact of religiosity has been shown in various populations. In a study of adolescent psychopathology and religiosity, which utilized a denominationally, ethnically, and socioeconomically diverse sample of 615 adolescents, findings revealed that forgiveness, daily spiritual experiences, and religious coping were associated with lower rates of depressive symptomatology in females (Desrosiers & Miller, 2007). In the above study, results also indicated that most dimensions of religiosity and spirituality were associated with greater life satisfaction in adolescents (Kelley & Miller, 2007).

As part of Weissman's (1987) study, Miller (1997) showed that intrinsic religiosity (a personal sense of the importance of spirituality and religion) and not extrinsic religiosity (including frequent attendance of religious services) was found to be protective against depression recurrence in mothers with major depressive disorder (MDD). Miller's study, which looked specifically at maternal religiosity and male and

female offspring, found that mothers (G1) for whom religion was highly important were 81% less likely to have MDD compared to mothers for whom religion was not highly important. Catholicism versus Protestantism was also found to be protective: Mothers who were Catholic were 79% less likely to have MDD. No association was found between the prevalence of maternal MDD at time 10 and frequency of attendance to religious services. Miller et al. (1997) found no significant association between offspring depression status and any of the three measures of offspring religiosity. The study found a marginally significant trend in the data which supports the hypothesis that maternal religiosity is protective against offspring MDD; Compared with daughters whose mothers did not consider religion highly important, daughters whose mothers considered religion highly important were 60% less likely to have MDD (p=.09). This trend was only evident for daughters. Compared with a son whose mother was Protestant, a son whose mother was Catholic was 78% less likely to have MDD (p=.09); this association was not significant among daughters. There was no association between maternal frequency of attendance of religious services and offspring depression.

The above findings point to the importance of recognizing spiritual and religious domains in developing insightful and effective healthcare. What it means to identify as religious or spiritual varies widely across individuals and is both nuanced and multifaceted. In considering the impact of religiosity on the development and trajectory of depression, the criteria for MDD involving feelings of worthlessness and feelings of emptiness are salient (American Psychiatric Association, 2000). Leading theories about the association between religiosity and depression include the potential mediators of social support, religious coping, and the role of cognitive appraisal (Dein, 2006).

Westgate (1996) posits that "a holistic model, interventions for depression would address the physical, affective, cognitive, social, and spiritual dimensions" (p. 26). Throughout his years of clinical work, Jung came to believe that neither intellectual nor moral understanding was adequate but that psychological well being was found in discovering a spiritual framework for living one's life (1933). In his book, *The Unheard Cry for Meaning*, psychiatrist and neurologist Victor Frankl emphasized the innate need to find meaning in life and discussed the discontent of the modern era as a problem of meaninglessness (1978). In attempting to unpack the relationship between religiosity and depression, the present study will focus on the potential mediator of cognitive appraisal and meaning making.

Potential Moderators and Mediators of the

Association Between Religiosity and Depression

In studying the link between religiosity and depression, potential moderating factors that have merited consideration based on past research include demographic variables of gender, age, and ethnicity. The protective effect of religiosity against depression, for example, may be more robust for older adults than for younger adults, for African-Americans than for European-Americans, and for women than for men (Desrosiers & Miller, 2007; Smith, McCullough, & Poll, 2003). It is important understand if the association of religiosity and depression varied according to gender for two reasons: depression is more prevalent in women than in men and religiosity has been shown to have a differential impact by gender in numerous studies. In respect to the former point, dependable gender differences have been found in depressive symptoms. Whether indexed by diagnosis or symptoms, depression has been shown to be more

prevalent for women than for men (Nolen-Hoeksema, Larson, & Grayson, 1999). It would be important to look at gender according to this gender difference alone when studying how and why religiosity impacts depression. However, several studies have directly shown that the protectiveness of religiosity against depression is more relevant for females than males (Desrosiers & Miller, 2007, Feldman, Fisher, Ransom, & Dimiceli, 1995; Mirola, 1999). For example, in a study of 615 adolescents, both level of spirituality and level of depression were elevated for girls than for boys; findings also revealed that forgiveness, daily spiritual experiences, and religious coping (all measured with the BMMRS) were associated with less depression for girls only (Desrosiers & Miller, 2007).

Both research findings and theory suggest that the positive relationship between religious belief and psychological well-being might be stronger for African Americans than for European Americans and posit that African Americans are generally "more religious" when compared with European Americans (Blaine & Crocker, 1995; Musick, Koenig, Hays, & Cohen, 1998). A study of 66 African American and 59 white university students indicated that "religious belief salience" and psychological well-being were positively correlated exclusively among African American students (Blaine & Crocker, 1995). This race related theme in the literature warrants further investigation.

Another variable of interest in the context of religiosity and mental health is age. Many of the studies examining the religiosity and mental health connection have focused on the elderly population and research indicates that the older we get, the more we turn to religion to cope with the stressors involved in again (Cruz, Schulz, Pincus, Houck, Bensasi, & Reynolds, 2009; Wink & Dillon, 2002). Age becomes a variable of interest in

the religiosity-health connection firstly because the elderly garner substantial attention in this line of research. The relative pervasiveness of religion or spirituality in the lives of older adults elucidates the probability of a common trajectory of spiritual development across the life span. Most of the existing knowledge or information on the subject comes from the study of individual lives, experiential data, and the examination of myths (Wink & Dillon, 2002). It does not seem an uncommon experience for thinkers to find spirituality moving toward the front burner of attention as they age (personal communication, 2000). To our knowledge, only one study to date directly aims to study spiritual development across adulthood (Wink & Dillon, 2002). In their secondary analysis of longitudinal data, Wink and Dillon (2002) explored changes in spirituality from early to older adulthood, considering potential precursors of personality, cognitive style, and life events to spirituality in older age. Participants in this study, who were a subset of a randomly generated representative sample, were assessed in childhood and adolescence as well as four times in adulthood: in 1958 when they were in their 30's, 1969 when they were in their 40's, 1982 when they were in their mid 50's-early 60's, and in 1997 when the cohort was in their late 60's-mid 70's. Findings from their study revealed both men and women (N=130) increased significantly in spirituality between late middle and older adulthood, while members of the younger cohort increased in spirituality throughout the adult life cycle. This study also indicated that spiritual involvement in older age was predicted by religious involvement and personality characteristics in early adulthood and subsequent negative life events (Wink & Dillon, 2002).

Despite a number of studies that raise an interest in demographic variables when studying the role of religion in mental health, comprehensive meta-analyses (i.e. Smith, McCullough, & Poll, 2003) have shown that the religiosity-depression relationship is not in fact moderated by gender, age, or ethnicity. Nevertheless, in studying the religiosity-depression relationship, and particularly when looking at this linkage in an unstudied population, it is important to explore whether these central demographic variables moderate the relationship.

In exploring possible mediating effects in the relationship between religiosity and depression, researchers have commonly pointed to the benefit of social support many garner from religious involvement. Religious or spiritual involvement can provide social connection and social support protects against depression, as has been demonstrated in numerous studies (Dein, 2006; George, Larson, Koenig, & McCullough, 2000; Koenig, McCullough, & Larson, 2001; Smith, McCullough, & Poll, 2003). Accounting for the possible "third variable" of social connection in the exploration of the religiosity-depression relationship is crucial; yet, it is possible that the trend in the literature to discuss the protective impact of religiosity as *merely* a means of social support is reductive in that it may overlook the quality of relationships that form on a common spiritual ground versus those that we inherit in school or work situations.

The Current Study

The primary aim of this study is to investigate the impact of religiosity on depression longitudinally in biological offspring who are at high and low familial risk for depression. Specifically, the present study seeks to expand on the previously mentioned study by Miller et al. (1997), which found that cross-sectionally, intrinsic religiosity (a personal sense of the importance of spirituality and religion) and not extrinsic religiosity (including frequent attendance of religious services) was found to be protective against depression recurrence in mothers with MDD. The study's development over the following 10-year period expanded so that there were assessments of religiosity and depression at two time points, allowing us to look prospectively over a 10-year period. Specifically we ask: 1) Is religiosity protective against the prevalence of depression cross-sectionally in individuals at high and low risk for depression? 2) Is religiosity protective against the prevalence of depression longitudinally in individuals at high and low risk for depression? 3) Is religiosity protective against depression for individuals at high- versus low-risk for depression?

Primary Research Questions

1) Is religiosity protective against the prevalence of depression longitudinally in individuals at high and low risk for depression?

2) Is religiosity protective against the prevalence of depression cross-sectionally in individuals at high and low risk for depression?

3) Is religiosity protective against depression for individuals at high- versus low-risk for depression?

METHOD

The data for this study come from a 20-year prospective study of three generations of families at high and low risk for depression (Weissman et al., 2006).

Participants

Depressed probands were participants at the Yale University Depression Research Unit, New Haven, CT., in 1982 (Time 1). The normal control subjects came from a 1975 community survey that was conducted in New Haven, and they had no history of psychiatric illness, based on at least 4 direct interviews. All probands were white and group-matched for age and sex.

The current study concerns a subset of the offspring of original probands. At Time 1, the sample included 220 offspring between the ages of 6 and 23 years from 91 families, including 153 offspring from 65 families with 1 or more depressed parent and 67 offspring from 26 families with neither parent depressed. Two years after the initial interview (Time 2), all 91 families were contacted for a second interview. Eighty five (93%) of the 91 families consented to participate and 79% were interviewed. Ten years after the initiation of the study (Time 10), families were recontacted for a reassessment. During the 10 years, among the 220 offspring interviewed at wave 1 there were two deaths and one offspring was found to have Down's Syndrome. Of the offspring interviewed at wave 1, 84% (182 of 217) were reinterviewed at the 10-year follow-up. There were no significant differences in the attrition rate of offspring by parental status or sex. However, at Time 10, older offspring were more likely to be interviewed than younger offspring (mean age, 28.5 vs. 26.4 years; t=-2.09; d/=54.9; P=.04) (Weissman, Warner, Wickramaratne, Moreau, Olfson, 1997). Between Time 10 and Time 20, 2 more

offspring were found to have died. Of the original available cohort of offspring, 70%

(151 of 215) were reinterviewed about 20 years after the initial interview (Time 20)

(Weissman, 2006).

For the present study, only the 113 offspring for whom depression status and all

religiosity variables were recorded were included. There were no significant differences

between those included and the 38 offspring who were not included based on missing

information. Offspring of at least 1 parent who met criteria for MDD were considered to

be at high risk for MDD while offspring of 2 non-depressed parents were regarded at low

risk for MDD. All interview waves were approved by the institutional review board at

New York State Psychiatric Institute/Columbia University. After complete description of

the study to the subjects, written informed consent was obtained from adults and assent

was obtained from the minors with written consent from their parents.

Assessments

All study participants were assessed for MDD, religiosity, social functioning, and

demographic variables. Across all waves, lifetime MDD clinical assessed using a detailed

diagnostic assessment, the Schedule for Affective Disorders and Schizophrenia—

Lifetime Version (SADS-L) for adults (Endicott & Spitzer, 1978; Mannuzza et al., 1986)

and the child version (K-SADS-E) modified for DSM-IV for subjects when they were

between ages 6 and 17 (Kaufman et al., 1997). The SADS-L was developed to reduce the

information and criterion variance of clinical diagnosis, which, in turn, improves the

reliability of diagnostic categories. The SADS-L utilizes the Research Diagnostic Criteria

(RDC), which was developed to reduce the criterion variance in the diagnosis. The RDC

includes DSM-III and DSM-III-R criteria (Mannuzza et al., 1986). The SADS-L provides

a detailed description of both past and current episodes of MDD so that it captures both incidence and prevalence of a psychiatric illness. The SADS-L has undergone field testing in 2 collaborative studies, which measured both test-retest reliability and independent evaluations made by two raters who observed the same interview. The cumulative frequencies for both procedures indicated high levels of concurrence for all scaled items utilized for the current study: Intra-class correlation coefficients of interrater reliability being .60 or better (Endicott & Spitzer, 1978).

Time 10 MDD status was based on the presence or absence of an episode of MDD between time 1 and time 10. Time 20 MDD status was based on the presence or absence of an episode of MDD between time 10 and time 20.

Offspring religiosity was measured at Time 10 and Time 20 by responses to three questions on religiosity from the SADSL: (1) degree of importance of religion or spirituality (highly important versus moderately important, slightly important, or not at all important) at time 10 and time 20; (2) frequency of attendance to church, synagogue, or other religious services (at least once a month versus less than once a month) at time 10 and time 20; and (3) current religious denomination at time 10 and time 20. These dimensions of religiosity and cutoff scores are consistent with previous studies on religiosity and depression (Koenig, 1992; Miller, 1997). Offspring reports on religiosity were blindly and independently collected (Miller, 1997).

Offspring completed the Social Adjustment Scale—Self Report (SAS), which contains questions on major areas of functioning on a 5-point scale, with higher scores indicating more impairment (Weissman et al., 2001). The SAS assesses the areas of work, social and leisure, extended family, marital, parental, and family unit social

functioning. Question in each domain of the SAS target the person's performance at expected tasks, amount of conflict with others, and satisfaction in interpersonal relationships (Weissman & Bothwell, 1976).

Procedure

Offspring were interviewed with the SADS-L at all waves. Interviewers were blind both to the clinical status of offspring's parents as well as offspring's clinical status at previous assessments. Interviewers were Ph.D. and Masters-level mental health professionals who were trained to administer the SADS. Training remained consistent across waves.

Interviewers and Best-Estimate Procedures

Final diagnosis of all generations was based on the best-estimate procedure (Leckman et al., 1982). Two experienced clinicians, a child psychiatrist and psychologist, who were not involved in the interviewing, independently and blind to the diagnostic status of the previous generation or prior assessments, reviewed all the material and assigned a DSM-IV diagnosis and a GAS score. The two diagnosticians co-rated 178 randomly selected cases from all generations. Kappa scores for interrater reliability were good to excellent: major depressive disorder, 0.82; dysthymia, 0.89; anxiety disorder, 0.65; alcohol abuse/dependence, 0.94; and drug abuse/dependence, 1.00.

Statistical Analysis

Differences between the following groups were assessed: high versus low risk offspring, offspring included versus excluded from the current sample, and offspring characteristics at Time 10 versus Time 20. Differences in the mean values for continuous

outcomes were tested using t-tests, and categorical variables were compared by the chi-square test.

Associations between offspring religiosity and offspring depression were assessed cross sectionally at time 10 and time 20, and also longitudinally between time 10 and time 20. Cross-sectional categorical outcomes (diagnosis) were analyzed using logistic regression with time 10 MDD as the outcome variable and the three religiosity variables at time 10 as predictors. Logistic regressions were also performed with time 20 MDD as the outcome variable and the three religiosity variables at time 20 as predictors. For the longitudinal analysis, logistic regression was also used to predict time 20 MDD from the three religiosity variables measured at time 10. Univariate models were initially run (to predict MDD from each religiosity variable on its own) for each predictor variable, followed by multivariate models, which included all three religiosity predictor variables.

Gender, age, history of MDD, and risk group status were included in all models as control variables. Demographic variables and social functioning were controlled for one at a time. All data was analyzed using PASW Statistics 18.0 (formerly known as SPSS Statistics 18, or SPSS Base).

RESULTS

Characteristics of Offspring

The sample of 113 offspring used in this analysis did not differ significantly by gender, age, marital status, education, employment status, individual and household income, rates of religiosity, or diagnoses from offspring who were excluded because of missing data on religiosity or depression (Table 1).

At the 20-year follow-up the current sample of high- and low-risk offspring did not differ significantly by gender, age, marital status, education, employment status, individual and household income, or rates of religiosity (Table 3). Individuals at high risk for depression experienced more episodes of MDD between Time 10 and Time 20; this difference was significant at the level of a trend (p=.07). Those at high risk had significantly higher rates of lifetime MDD than those at low risk for depression (57.7% versus 23.8%; X^2 = 6.45, p=.01) and also had significantly higher rates of MDD episodes between Time 10 and Time 20 at the level of a trend (23.9% versus 14.3%; X^2 = 3.39, p=.07). Although not statistically significant, low risk offspring rated both religious importance and attendance more highly than high risk offspring: 45.2% of low risk offspring felt religion/spirituality was highly important to them, while 39.4% of high risk offspring said religion was highly important to them at Time 20. 57.1% of those at low risk attended religious services or events at least once a month, while 54.9% of those at high risk attended that frequently (Table 3). 83.1% of the high risk subset were Catholic, while 88.1% of low risk offspring were Catholic.

Demographic information and rates of religiosity at Time 10 and Time 20 can be seen in Table 4. There were 44 males (38.9%) and 69 (61%) females in the sample. At

Time 10, the sample's mean age was 29.23 and at Time 20 the sample's mean age was 37.05. There were 71 (62.8%) individuals at high risk and 42 (37.1%) offspring at low risk. At Time 10, 17 (15%) offspring met criteria for MDD, while at Time 20, 27 (23.9%) offspring met criteria for MDD. Generally, religious involvement grew as individuals aged: at Time 10, 29 (25.6%) participants endorsed religion/spirituality as being highly important to them and at Time 10, 47 (41.5%) endorsed high importance. At Time 10, 54 (47.7%) participants attended religious services or events at least once a month, while at Time 20, 63 (55.7%) participants attended this regularly. All offspring included in the sample identified as either Protestant (15%) or Catholic (85%).

Longitudinal analyses: Religiosity and MDD

Logistic regressions were used to predict offspring MDD at Time 20 from offspring religiosity at Time 10. No statistically significant association was found between frequency of attendance or denomination at Time 10 and MDD at Time 20 (Table 5). A significant association was found between religious importance at Time 10 and depression at Time 20; when compared with those who did not deem religion/spirituality to be highly important in their lives, those who considered religion/spirituality highly important had significantly lower odds of having MDD 10 years later (OR = .235, p = .039). In multivariate logistic regression (Table 5) controlling for attendance and denomination, religious importance was still significantly and positively associated with lower odds of depression at the level of a trend (OR=.235, p = .056). These findings held when controlling for sex, age, prior depression status, education, marital Status, income, risk group, and social functioning.

A logistic regression model, controlling for the interaction of offspring Time 10 religiosity and offspring Time 10 high and low risk status, which examined whether the effect of religiosity on depression status varied according to being at high versus low risk for depression, yielded significant results (Table 6). The interaction of religious/spiritual importance at Time 10 and risk group was significantly associated with MDD status at Time 20 (OR = .078, p = .033). There was no equivalent significant association among offspring at low risk for depression. In multivariate logistic regression (Table 6) controlling for attendance and denomination, the interaction of religious/spiritual importance with risk group was still significantly associated the odds of depression among those at high risk 10 years later (OR = .085, p =.029). These findings held when controlling for sex, age, prior depression status, education, marital status, income, risk group, and social functioning.

When we stratified by risk group status, univariate logistic regression revealed that for individuals at high risk for depression, religious/spiritual importance was significantly associated with lower odds of depression at follow-up (Table 7). People in the high risk group who endorsed that religion/spirituality was highly important to them at Time 10 had significantly lower odds of having MDD at Time 20 (OR = .086, p = .032). Multivariate regression revealed that when controlling for attendance and denomination, religious/spiritual importance was still significantly associated with lower odds of depression for those at high risk (OR = .094, p =.032). These findings held when controlling for sex, age, prior depression status, education, marital Status, income, risk group, and social functioning.

Univariate logistic regression indicated that for low risk individuals, religiosity did not significantly predict rates of depression longitudinally (Table 8). It is important to note, however, that only 6 people in the low risk group met criteria for having a major depressive episode between assessments, making it impossible to conclude anything meaningful for this subsample.

Cross-sectional analyses of Time 10: Religiosity and MDD

The cross-sectional analysis that assessed religiosity and depression in offspring at Time 10 revealed no significant associations between prevalence of MDD and frequency of attendance of religious services or religious/spiritual importance (Table 9). People who were Catholic were found to have a 77% lower likelihood of MDD at Time 10 than people who were Protestant (OR = .241, p = .015). These finding held when controlling for sex, age, risk group, education, marital status, and income.

A logistic regression model, controlling for the interaction of offspring Time 10 religiosity and offspring Time 10 high and low risk status, which examined whether the effect of religiosity on depression status varied according to being at high versus low risk for depression at Time 10, yielded significant results (Table 10). The interaction of risk group and importance was significant (OR = 4.735, p = .021). In multivariate logistic regression (Table 10) controlling for attendance and denomination, the interaction of risk group and importance remained significant (OR = 4.028, p =.045). These findings held when controlling for sex, age, prior depression status, education, marital status, income, and risk group. A logistic regression model, controlling for the interaction of offspring Time 10 attendance and offspring Time 10 high and low risk status, which examined whether the effect of religiosity on depression status varied according to being at high

versus low risk for depression at Time 10, also yielded significant results (Table 10). The

interaction of risk group and attendance was significant (OR = 2.953, p = .088). In

multivariate logistic regression (Table 10) controlling for importance and denomination,

the interaction of risk group religious attendance was significantly associated with

depression at Time 10 (OR = 3.752, p =.031). These findings held when controlling for

sex, age, prior depression status, education, marital status, income, and risk group.

We were not able to stratify by risk group given only two offspring experienced

MDD at Time 10. When we looked at high risk offspring exclusively, logistic regression

revealed that for individuals at high risk for depression, religious attendance was

significantly associated with higher odds of depression at Time 10 (Table 11). People in

the high risk group who endorsed frequent religious attendance at Time 10 had

significantly higher odds of having MDD at Time 10 at the level of a trend (OR = 2.925,

p = .090). Multivariate regression revealed that when controlling for importance and

denomination, religious attendance was no longer significantly associated with higher

odds of depression for those at high risk (OR = 2.299, p =.216). These findings held

when controlling for sex, age, prior depression status, education, marital Status, income,

and risk group.

When looking at high risk versus low risk offspring separately using chi-square

tests, which do not allow for other variables to be controlled, results revealed neither high

risk nor low risk offspring's attendance status was significantly associated with MDD

cross-sectionally at Time 10 (X^2 = 2.289, p = .130; X^2 = .263, p = .608, respectively).

Chi-square tests of high risk versus low risk offspring importance and MDD did not

reveal significant results cross-sectionally at Time 10 (X^2 = 2.227, p = .136; X^2 = .187, p

= .666). Chi-squared tests of high risk offspring did not reveal a significant association between denomination and MDD cross-sectionally at Time 10 (X^2 = 1.291, p = .256); however, supporting results from the logistic regression discussed above, denomination was significantly associated with MDD cross-sectionally at Time 10 for offspring at low risk (X^2 = 15.540, p = .000).

Social Functioning

When controlling for social functioning, the significance level for religious importance changed considerably to reach significance (OR = 3.619, p = .030), indicating it was associated with higher rates of depression (Table 12). Multivariate regression that controlled for attendance and denomination revealed importance only predicted higher rates of depression at the level of a trend (OR = 3.072, p = .100). Additionally, when controlling for social functioning, there was a further reduced odds of depression in those who identified as Catholic (change in OR from .241 to .164, p = .002). There was no noticeable change in the association between attendance and depression when controlling for social functioning.

Due to the changes in results when controlling for social functioning, we then ran logistic regression models that included social functioning controlling for the interaction of offspring Time 10 religiosity and offspring Time 10 high and low risk status (Table 13). When including social functioning in the model, the interaction of Time 10 importance and risk group was significant (OR = 5.357, p = .019). Multivariate regression that controlled for attendance and denomination revealed the interaction of importance and risk group was significant at the level of a trend (3.556, p = .092). The interaction of Time 10 attendance and risk group was also significant (OR = 4.522, P =

.015). Multivariate regression that controlled for importance and denomination revealed the interaction of attendance and risk group was still significantly associated with Time 10 depression at the level of a trend (OR = 3.464, p = .062). The interaction of Time 10 denomination and risk group was significantly associated with Time 10 MDD (OR = .164, p = .002) and remained significant in the multivariate regression that controlled for importance and attendance (OR = .167, p = .008).

Again, we were unable to stratify by risk group because only two offspring in the low risk group experienced MDD by Time 10. When looking exclusively at high risk offspring, logistic regression that controlled for social functioning revealed religious importance was positively associated with MDD cross-sectionally at Time 10 (Table 14). People in the high risk group who endorsed religion was highly important at Time 10 had significantly higher odds of having MDD at Time 10 at the level of a trend (OR = 3.806, p = .079). Multivariate regression, which controlled for attendance and denomination, revealed importance was no longer significantly association with MDD at Time 10 (OR = 2.843, p = .190).

Cross-sectional analyses of Time 20: Religiosity and MDD

The cross-sectional, Time 20 analysis revealed no significant association between offspring depression status at Time 20 and any of the three measures of offspring religiosity at Time 20 (Table 15).

To explore the potential differential impact of religiosity on MDD according to risk group status, we ran logistic regression on models that included an interaction term for each religiosity variable and risk group. The Time 20 cross-sectional interactions revealed no significant results (Table 16).

DISCUSSION

The present analyses suggest that 1) prospectively, a personal importance of religion is protective against MDD over a 10-year period; 2) prospectively, there exists a differential effect of religious belief on MDD in individuals at high versus low risk for depression; 3) prospectively, the protective effect of religious/spiritual importance against MDD is exclusive to individuals at high risk for depression based on parental MDD status; 4) Time 10 Catholicism is protective against MDD cross-sectionally 5) The protective effect of Catholicism may be more prevalent in individuals at low risk for depression than in individuals at high risk for depression; 5) cross-sectionally, there exists a differential impact of religious attendance on the prevalence of MDD in those at high risk versus those at low risk for depression at Time 10: for those at high risk for depression, religious attendance is associated with increased rates of MDD; 6) cross-sectionally, after controlling for social support there exists a differential impact of religious attendance on MDD in those at high versus low risk for depression: in individuals at high risk for depression, after controlling for social functioning, religious importance becomes a risk factor for MDD.

The Impact of Religiosity on MDD Over Time

This study examined the relationship between religiosity and depression in individuals at high versus low risk for depression based on parental MDD status. We had a unique opportunity to address a dearth in the research on the longitudinal relationship between religiosity and mental health. This study examined the prospective association between the prevalence of MDD in offspring at high versus low risk for depression with three dimensions of religiosity: 1) personal importance of religion or spirituality, 2) attendance at religious services and events, and 3) religious denomination. Consistent with previous research, findings showed that, after controlling for social functioning, age, gender, past history of depression, and risk group, those who endorsed religion as being highly personal important had lower odds of MDD over a 10-year period. Findings also showed that the protective effect of religious importance is exclusive to offspring at high risk based on parental status of having one or more parent with MDD.

Previous research has found a positive association between self-rated importance of religion, also called "religious salience," and lower rates of depression (Rabins, Fitting, Eastham, & Zabora, 1990; Ross, 1990; Braam, Beekman, Deeg, Smit, & Tilburg, 1997; Shafer, 1997). Relatively few prospective studies have been conducted that examine this relationship; however, a burgeoning literature on the longitudinal examination of religiosity and depression supports this study's findings that religious salience is protective over time. This study adds to the slowly growing number of longitudinal explorations of religiosity and depression in that we were able to follow participants over a ten-year period, which is the longest follow-up period in this area of research to our knowledge. The present findings also add to the body of literature on the

longitudinal pattern of the religiosity-depression linkage in that it looks specifically at individuals at high risk for depression versus individuals who are considered to be at low risk for depression based on the presence or absence of DSM-III-R diagnosis in both biological parents. A substantial quantity of the previous research on religion and depression has focused on populations who already have depression with the agenda of identifying factors associated with recovery (i.e. Koenig, George, & Peterson, 1998 and Nasser & Overholser, 2005). This study develops previous finding by both looking at those who have not necessarily developed depression but are predisposed to experiencing depressive symptomatology and comparing these individuals with those who are better protected against depression from a biological standpoint.

One of the leading "third variable" mediators that has been discussed in the religiosity-depression literature is social support. Because the present longitudinal findings held after controlling for social functioning, utilizing a measure that accounts for social support, this explanation seems not to fit this particular population.

The frequently proposed mediator of cognitive appraisal seems a likely possibility for the long-term protective effect of religious salience against depression. It might be that religiously involved people evolve to process suffering differently, which would certainly impact their mental health trajectory. The idea that people with a strong commitment to religion/spirituality might process suffering differently than those without this commitment, is likely true for times in life when people experience great stress, such as divorce or death of a loved one. Researchers and theorists tend to posit that cognitive appraisal would contribute to the stress-buffering effect of religiosity, in that it would help people perceive negative life events as less stressful, creating a stress-buffering

effect (i.e., Smith, McCullough, and Poll, 2003); while this is indeed likely, in people who have MDD the experience of being depressed is not necessarily tied to life events. The mediator of cognitive appraisal might be just as relevant to the direct experience of sadness or anguish itself, regardless of an external stressor. For the high risk offspring in this study, religious involvement, and the emergence of this involvement over 10-years, may infuse one's relationship to suffering with a constructive quality, a sense of bigger perspective or openness perhaps. In referring to the sacred, Jones (2002) stated, "the sacred is not, necessarily, a unique and special object or domain split off from the rest of life, but is rather the world of ordinary objects experienced in a particular way" (p. 61). Perhaps the protective effect of clarifying the deep importance religion/spirituality holds in one's life has more to do with the orientation she develops toward experience itself, whether the experience of negative self-referential thoughts or feelings of sadness. Many religious/spiritual teachings from various traditions put forth the idea that suffering is neither bad nor good, but instead is an opportunity (Chodron, 1997; Thondup, 1996). The Buddhist teacher Susan Piver speaks about the similar qualities inherent in both the experience of a broken heart and the experience of being in touch with the sacred (2010). While the state of heart-break is excruciating, Piver underscores the aspects of suffering that can approximate the experience of being spiritually awake or present— aspects such as heightened compassion for one's own and others' sorrow, the keen sensitivity to love's absence or presence, loss of certainty about the future, and a more grounded perspective on the typical, everyday things that are usually regarded as troublesome. If the experience of pain is appraised as being an opportunity for growth or for contact with the present moment, so that the internal experience is valued as comprising something from which to

learn rather than avoid, the trajectory of depressive symptomatology might change dramatically.

Time 10 Catholicism and Time 10 MDD

Time 10 Catholicism was protective against MDD cross-sectionally, when the mean age of offspring was 29-years-old. This finding is consistent with the previous finding on the mothers of the offspring in the present study: Catholic mothers had lower rates of depression than Protestant mothers when assessed cross-sectionally (Miller, Warner, Wickramaratne, & Weissman, 1997). This finding is also consistent with a study of adults with family members undergoing coronary artery bypass grafts, which revealed Catholics had significantly lower rates of depressive symptomatology than non-Catholics (VandeCreek, Pargament, Belavich, Cowell, & Friedel, 1995). It is also consistent with the generative work of Emile Durkheim (1897/1951), who found that fundamentalist groups, such as Catholics, which require resolute devotion to their faith, had lower suicide rates than groups considered liberal, such as Unitarians, which maintain a more questioning atmosphere. However, the culmination of studies on Catholicism and depression present inconsistent findings. Much of the research has reported either no association or a positive association between Catholicism and depression (Koenig, George, & Peterson, 1998).

The protective effect of Catholicism may be exclusive to individuals at low risk for depression. This finding does not fit obviously into previous findings on denomination and depression, as no study to our knowledge has looked specifically at this association in individuals who are considered at low risk for depression. A possible explanation for the protective effect of Catholicism in individuals who are, in essence,

protected from depression biologically, is discussed by Sethi and Seligman (1993), whose

work on the explanatory style from nine religious groups revealed that fundamentalists

were significantly more optimistic than individuals from moderate religions. Sethi and

Seligman's two-part study examined whether variation along the spectrum of

fundamentalist and liberal religions impact individual's levels of optimism. In study 1,

Sethi & Seligman compared the explanatory styles, or attributional styles, of members of

religions that span the spectrum of fundamentalism-liberalism. In study 2, the authors

content-analyzed religious materials, including sermons and prayers, from the nine

included religions. Findings showed that 1) fundamentalists were more optimistic than

moderates, who were more optimistic than liberals, 2) religious hope, religious influence

in daily life, and religious involvement were higher for fundamentalists than for

moderates and higher for moderates than for liberals and 3) optimistic sentiments in

fundamentalist religious materials was greater than in moderate religious materials, and

greater in moderate materials than in liberal materials. The authors proposed the greater

optimism they found to be present in active members of fundamentalist religions was

accounted for by the positive explanatory style found in fundamentalist services, along

with greater religious involvement, influence, and hope culminate to afford a more

optimistic perspective in fundamentalists (Sethi & Seligman, 1993).

While it is common for social science to focus on the legitimate negative

consequences that can arise from authoritarianism in religious cultures, the above

study illuminates the possibility that complete devotion to faith, whereby life is

made sense of through a lens that is actively steeped in one's religion's teachings

might allow for greater optimism. This idea echoes the words of William James

(1936) who spoke of the difference between following one's religion out of habit, as if going through the motions of a "second-hand religious life," and living and breathing one's religion, which requires the insights born out of direct, first-hand experience; he stated, "we must make search rather for the original experiences which were the pattern setters to all this mass of suggested feeling of suggested meaning and imitated conduct. These experiences we can only find in individuals for whom religion exists not as a dull habit, but as an acute fever rather" (p. 19).

It is possible that those who are biologically predisposed to depression by parental status (high risk) have a tendency toward questioning, doubt, and ambivalence, while those who are protected from depression (low risk) are more easily inclined toward blind faith. The blind faith, or absolute belief that Catholicism might require more so than moderate or liberal religions, might both reflect and generate an explanatory style that affords clarity and freedom from the kind of doubt that those who suffer from MDD often endure.

Another possible explanation for the cross-sectional finding that Catholicism, versus Protestantism, protects against depression is an alternative interpretation of the aspect of authoritarianism found in fundamentalist religions such as Catholicism; perhaps members of fundamentalist religions feel compelled to answer questions about their faith more confidently and/or optimistically than they might actually feel. In other words, perhaps the authoritarian environment of fundamentalist religions creates a desirability bias in members' answers about both their faith and their outlook. Qualitative research that specifically explores

the cognitive appraisal styles of those involved in fundamentalist religions versus members of moderate and liberal religions is warranted.

The Time 10 Cross-Sectional Association of Religious/Spiritual Importance and Attendance with Higher Rates of Depression

When assessed cross-sectionally, Time 10 religious attendance is associated with higher rates of Time 10 MDD in those at high risk for depression. While this particular high risk population has not been well studied in the context of religiosity, this finding contradicts the thrust of previous cross-sectional research on religious attendance and depression, which has typically shown an inverse relationship (Koenig, McCullough, & Larson, 2001). Some studies have indicated a positive association between religiosity and depression, which has led to a dialogue in the literature about the possible catalyst depression can be for some to seek comfort, meaning, inspiration, or safety in religion (Ferraro & Kelley-Moore, 2000). The mechanisms behind this kind of religious consolation—a form of coping with tribulation that integrates religious or spiritual meaning systems—has not been sufficiently explored in the literature on the religiosity-depression connection. While stressful life events have been both studied and discussed to some extent in the literature on religiosity and depression, the exploration of mood itself as the catalyst for religious or spiritual seeking, and potentially a transformation in religious and spiritual orientation, has not been given much attention. Yet it seems intuitively reasonable that people, in their most dire moments of impenetrable sadness, might look for religious or spiritual guidance or containment. In the high risk subsample in the present study, those who *attended religious services* had greater rates of MDD at Time 10, when the offspring mean age was 29. Over 50% of offspring at high risk met

criteria for MDD at least one assessment through Time 20; this group was particularly prone to suffering from severe depression, so that the fact they ended up increasing in religious attendance from 36.6% to 54.9% between Time 10 and Time 20 is not surprising if considered in light of the above theory that depression can activate spiritual or religious seeking. The salience of religious importance also increased for the high risk group: at Time 10 religion or spirituality was highly important for 19.7% of high risk offspring and at Time 20, it was highly important for 39.4% of offspring. Thus, religiosity moved to the front burner of people's lives between Time 10 and Time 20. Furthermore, cross-sectionally, after accounting for social functioning, religious/spiritual importance became a risk factor for MDD. Taken together, these findings indicate that offspring at high risk may have drawn closer to religiosity as their struggles with depression intensified. It is also possible that stressful life events catalyzed offspring's increase in religiosity. However, this would need to be further explored by incorporating life events into the present study.

Religious/Spiritual Development and the Course of Depression

Considered collectively, this study's findings point to a possible trajectory of spiritual development that might be particularly relevant to people at high risk for depression. This proposed pathway begins with a struggle marked by suffering and a turn toward spirituality or religion and leads to an emergence of religious or spiritual salience that is protective over time.

Few studies have explored potential models of spiritual development; of those that have explored the course of religious or spiritual belief and practice, findings indicate that as people age, they place more value or attention on spiritual or religious matters. For

example, in a cross-sectional study, Fowler (1981) discovered a positive association

between age and progressive stages of development in one's faith. A longitudinal study

that assessed the development of 290 men and woman from their early 30's to their late

60's revealed all participants increased significantly in spiritual salience between late-

middle and older adulthood (Wink and Dillon 2002). One broad model of spiritual

development that has been discussed in the literature posits that the emergence of

spirituality is, essentially, as perk of growing up. In other words, some researchers and

thinkers suggest that spiritual growth is a positive marker of the natural maturation

process. For instance, Jung posited that around midlife, after energy and attention to

external responsibilities such as forming family and career, it is common for people to

begin or intensify the turn toward the more spiritual aspects of the self (Jung, 1943; Wink

& Dillon, 2002). The tenets of postformal stages of cognitive development build on

Jung's theory about spiritual development in that spirituality can be an organic process in

the overall course of maturation (Sinnott, 1994). Part of this process, involving new

'modes of knowing,' incorporates experiences in life that teach about the inevitability of

ambiguity and paradox and, in turn, might predispose humans to a more expansive mode

of making sense of life's meaning (Wink & Dillon, 2002).

Theologians and psychologists alike have posited that spiritual growth occurs

more often in times of crisis or hardship (Chodron, 1997; Piver, 2010). This introduces a

second model of spiritual development that is certainly not at odds with the first, although

its emphasis is on the tribulations involved with aging being the foundation for the aging

and spirituality association. For example, McFadden (1996) suggests that spiritual modes

of being may become more prominent in as humans age because of the inevitable losses and challenging that growing older entails.

For the developmental psychologist Eric Erikson, who was one of the first psychologists to focus on stages of adult development, faith is an important factor in healthy adult maturation. Erikson hypothesized eight stages of human development that extended over the life span: 1) infancy- trust vs. mistrust, 2) toddlerhood- autonomy vs. shame, 3) childhood-initiative vs. guilt, 4) school age- industry vs. inferiority, 5) adolescence- identity vs. role confusion, 6) adulthood- intimacy vs. isolation, 7) maturity-generativity vs. stagnation, 8) later life- integrity vs. despair (Erikson, 1982). In his study of people, Erikson noticed part of mature identity had to do with the solidification of the spiritual self (Hoare, 2009).

Theologian James Fowler (1995) developed a theory of human development that examines the ways in which individuals navigate faith. Fowler's six stages of faith span the from childhood to later life. Each of Fowler's stages of faith belong flexibly to a particular period of life: 1) childhood: intuitive-projective faith, 2) school age: mythic-literal faith, 3) adolescence: synthetic-conventional faith, 4) mid-life: conjunctive faith, 5) mature adulthood: open faith, 6) universalizing faith (age range not specified). These stages represent different periods of human development in which individuals make sense of themselves and the world in terms of what and how they understand meaning, from how it is presented by others, myths, and stories to how it takes form personally in coming in touch with what one values internally. Fowler discusses the intrinsic aspect of spiritual development involving loss of previously held spiritual beliefs and meaning-systems, which he calls the "dark night of the soul." Here, the suffering that is inherent in

human life is understood as a crisis of faith, and, within Fowler's framework, can be particularly relevant to times of transition between stages. For instance, deep sorrow and anguish can arise when the individual shifts into the stage of conjunctive faith, which involves a period of stepping back from assumed faith-based tenets and explores spiritual matters through personal experience and, often, disappointments in formerly held belief systems. Although an exact age range is not given, the stage of conjunctive faith is thought to take place anywhere from the end of adolescence into mid-life.

The present study's findings may illuminate a process of faith development whereby those at high risk for MDD turn to spirituality or religion, giving rise to the association at Time 10 between higher rates of MDD and religious/spiritual importance and attendance. Perhaps the protective impact of religious/spiritual importance that appears over time, but not cross-sectionally, for those at high risk is indicative of the protective quality of religious salience being wed to an emergence of faith and commitment that unfolds over time. The aforementioned research and theory that recognize times of suffering as catalysts for spiritual leaning and potential growth might give this study's findings a framework for understanding the high risk's group inverse cross sectional Time 10 and longitudinal Time 10 to Time 20 associations. The association between greater levels of depression and greater levels of religious/spiritual attendance and, after removing the impact of social support, importance at Time 10 can be understood as religious coping. Yet religious coping is not necessarily a Band-Aid for emotional suffering. The present findings illuminate the possibility that something more substantial can be gained from drawing on religion/spirituality when faced with severe depression. The longitudinal finding that religious/spiritual salience is protective against

depression prospectively over a 10-year period points to the potential transformative ingredients of time spent with religious/spiritual inquiries and the enduring commitment to that arena of experience. This framework for interpreting the present findings is reminiscent of James's before mentioned contention that the transformative properties of religious/spiritual affiliation lie in the commitment to whatever an individual experiences as sacred: "Religion, therefore, as I now ask you arbitrarily to take it shall mean for us the feelings, acts, and experiences, of individual men in their solitude, so far as they apprehend themselves to stand in relation to what they consider divine (James, p. 39).

Implications for Psychotherapy

The issue of commitment is of central importance to the recently empirically established psychotherapy intervention, Acceptance and Commitment Therapy (ACT). ACT has been shown to be particularly effective for depressive disorders (Zettle, 2007). ACT is one of several interventions that harnesses the tenets of religious/spiritual traditions for non-secular psychotherapies. ACT integrates the core teaching of mindfulness and acceptance teachings from the Buddhist tradition into a cognitive-behavioral model of psychotherapy. ACT emphasizes the importance of making room in therapy to discover clarity about what one values and living in alignment with those values. This intervention modality does not focus on symptoms to the exclusion of exploring meaningful and treasured aspects of one's life so that those aspects can be elucidated and enhanced. ACT's core process involves exploring a transcendent sense of self, which is called "self as context," learning about and practicing "acceptance," which is ACT is a form of willingness to allow internal experience to occur without avoidance, "contact with the present moment," which places an emphasis on coming out of

ruminative states of (cognitively) tinkering with the past and future and touching the

present moment with one's awareness, "values," which involves an exploration of what

the client truly values in her life, from fulfilling relationships to being in nature to playing

a sport, and "committed action," which emphasizes changes in behavior based on the

client's clarified values (Zettle, 2007, p. 16). The present findings give credence and

understanding of the effectiveness of this type of therapy, which works with human

suffering by turning toward an open exploration of what is meaningful in a client's life.

Another example of the spiritual domain entering psychotherapy is articulated by

Carl Rogers (1989), the founder of the humanistic tradition: "I feel at times when I'm

really being helpful to a client of mine, in those sort of rare moments when there is

something approximating an I-Thou relationship between us, then I feel as though I am

somehow in tune with the forces of the universe or that forces are operating through me

in regard to this helping relationship" (p.74, in Elkins, 1995). Here, Rogers touches

poignantly on the potential for the clinician to allow for utter presence with his client,

which can be said as allowing for the sacred to emerge in the therapeutic relationship.

Wink and Dillon's study of spiritual development across adulthood showed that

cognitive commitment, which they defined as "the degree to which an individual is

introspective, evaluates situations and motives of others, shows insight, has a wide range

of interests, and thinks unconventionally," enhances spiritual development (2002, p. 85).

This finding highlights one potential mechanism by which spiritually oriented

psychotherapy can be particularly effective for certain people in that it shows the

correlation between spirituality and psychological mindedness.

Clients commonly come to psychotherapy in times of psychological and emotions stress and conflict. Interpretation of the present findings suggest that religious/spiritual coping can be highly effective at reducing rates of depression so that psychological treatment might benefit from identifying and invoking the spiritual dimension. This study indicates the potential efficacy of practicing psychotherapy that is open and in tune with the client's spiritual questions and longings, which can often underlie more overt and immediate agendas (Sperry & Edward, 2005). Openness on the part of the psychotherapist to explore and address the spiritual domain, if relevant to the client's life, seems particularly germane to individuals living with depression, which often includes a loss of contact with one's valued areas of life, a sense of worthlessness and unlovableness, and a struggle to find meaning.

Limitations

Although this study was the first ten-year prospective study of religiosity and MDD in a high risk sample, several limitations warrant discussion. A common limitation in studies of religiosity and depression is the use of single item measures of importance of religion/spirituality, (Koenig, McCullough, & Larson, 2001). The single item measure of importance of religion/spirituality used in this study may rely on face validity and ignore distinctions in the intimate and private relationship people have to their faith. Although this limitation cannot be disregarded, previous studies have shown single item to have a high correlation with a widely used Fetzer Institute full scale measure of personal spirituality (Desrosiers & Miller, 2007). Second, the sample size of offspring with religiosity and MDD data was relatively small, which is indicative that the finding need to be replicated in a larger sample. Third, the sample is limited to entirely white and

predominantly working class individuals so that findings cannot be generalize to ethnic

minorities or samples that fall in the high or low socioeconomic brackets. Fourth, the

sample is drawn from the greater New Haven, CT, area, and is thus limited to Catholics

and Protestants, which are the most highly represented denominations in that community.

Lastly, the original study design does not have timeline data on the emergence of

personal importance, such that a comparison cannot be made between the precise timing

of emergence and onset of depression.

Conclusion

Within the context of these limitations, the present study explored the relationship

between religiosity and MDD in offspring at high and low risk for depression based on

parental MDD status. Our findings indicate that cross-sectionally, when the average age

of the sample is 29, both importance of religion/spirituality and attendance at religious

services are associated with higher rated of MDD. After controlling for social support,

higher levels religious/spiritual importance are also related to higher rates of depression

at Time 10. Although the sample size of those at low risk for depression did not allow for

more conclusive results, it is likely that the positive associations between higher levels of

religiosity and higher rates of depression are exclusive to the subsample of offspring at

high risk for depression. Additionally, Catholicism was found to be protective against

depression cross-sectionally at Time 10 when compared with Protestantism and this

effect might be exclusive to offspring at low risk for depression.

Considered collectively, the present findings suggest that those at high risk for

depression might turn to faith for coping and that a personal commitment to

religion/spirituality fosters an internalization of the protective benefits of faith that protects against depression over a 10-year period. Future research is needed to compare religiosity within a larger sample of those at high and low risk for depression, using a prospective data design with more frequent assessment points so that the determination can be made as to the precise timing of religious/spiritual emergence and onset of depression.

Table 1: T10 Demographics of included and excluded offspring participants				
	Included Offspring (n=113)	**Excluded Offspring (n=59)**	**Chi-square**	**_p_- value**
Age	M = 29.23	M = 30.17	T= 1.09	0.28
	SD=5.40	SD= 5.46		
Years of Education	M= 14.00	M= 14.10	T=.22	0.82
	SD = 2.291	SD=2.58		
Males	38.9% (69/113)	52.5% (31/59)	1.16	0.26
MDD[a]	15.0% (17/113)	27.1% (16/59)	3.64	0.07
High Risk[b]	62.8% (72/113)	76.3% (45/59)	3.41	0.06
Anxiety	4.4% (5/113)	11.9% (7/59)	0.11	0.73
Substance Abuse	15.9% (18/113)	20.3% (12/59)	0.26	0.60
High Income (>40,000)	19.5% (22/113)	11.9% (7/59)	1.10	0.29
Medium Income (20-39,000)	35.4% (40/113)	33.8% (20/59)	0.13	0.71
Low Income (<20,000)	39.9% (45/113)	33.8% (20/59)	0.36	0.55
Single	35.4% (40/113)	32.2% (19/59)	0.06	0.80
Married	52.2% (59/113)	40.1% (24/59)	1.63	2.03
Divorced or Separated	11.5% (13/113)	8.4% (5/59)	0.13	0.72

[a]Met criteria for having an MDD episode between Time 2 and Time 10 using the SADS at Time 10
[b]Met criteria for High Risk if either parent had MDD
* Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

Table 2. Demographics and Rates of Religiosity of High Risk and Low Risk at T10				
	High Risk (n=71)	**Low Risk (n=42)**	**Chi-square**	***p*-value**
Age	M= 29.73	M= 28.39	T=1.45	0.15
	SD= 5.76	SD= 4.68		
Males	39.4% (28/71)	38.1% (16/42)	0.02	0.88
MDD[a]	21.7% (15/71)	4.8 % (2/42)	5.53*	0.01
MDD Lifetime	47.9% (34/71)	23.8% (10/42)	6.43*	0.01
Anxiety	5.6% (4/71)	2.4% (1/42)	8.616**	0.00
Substance Abuse	15.5% (11/71)	16.7 % (7/42)	0.27	0.86
Income				
High Income (>40,000)	18.3% (13/68)	21.4% (9/42)	0.03	0.89
Medium Income (20-39,000)	35.2% (25/68)	35.7% (15/42)	0.01	0.92
Low Income (<20,000)	42.2% (30/68)	35.7% (15/42)	0.00	0.98
Years of Education	M=13.78	M= 14.00	T= .54	0.58
	SD=2.32	SD= 2.29		
Marital Status				
Single	36.6% (26/71)	33.3% (14/42)	0.01	0.93
Married	52.1% (37/71)	59.5% (25/42)	0.12	0.76
No Longer Married	9.9% (7/71)	7.1% (3/42)	0.01	0.92
Importance of Religion				
Highly Important	19.7% (14/71)	35.7% (15/42)	3.53†	0.06
Moderately Important	47.9% (34/71)	57.1% (24/42)		
Slightly Important	28.2% (20/71)	4.8% (2/42)		

Not At All Important	4.2% (3/71)	2.4% (1/42)		
Attendance of Religious Services				
Attend at Least Once a Month	36.6% (26/71)	66.7% (28/42)	9.549**	.002
Denomination[b]				
Protestant	16.9% (12/71)	11.9% (5/42)	0.20	0.66
Catholic	83.1% (59/71)	88.1% (37/42)	0.20	0.66

[a]Met criteria for having an MDD episode between Time 1 and Time 10 using the SADS at Time 10
[b]Individuals who changed denomination between time 10 and time 20 were omitted from the sample
† Statistical trend indicated by $p < .10$
* Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

Table 3. Demographics and Rates of Religiosity of High Risk and Low Risk at T20				
	High Risk (n=71)	**Low Risk (n=42)**	**Chi-square**	***p*-value**
Age	M= 37.59 SD= 6.80	M= 36.14 SD= 4.79	T=1.45	0.15
Males	39.4% (28/71)	38.1% (16/42)	0.02	0.88
MDD[a]	29.6% (21/71)	14.3 % (6/42)	3.39	0.07†
MDD Lifetime	57.7% (41/71)	23.8% (10/42)	6.45	0.01*
Anxiety	15.5% (11/71)	4.8 % (2/42)	2.02	0.16
Substance Abuse	9.9% (7/71)	4.8 % (2/42)	0.37	0.54
Income				
High Income (>40,000)	37.9% (27/69)	37.5% (15/40)	0.03	0.89
Medium Income (20-39,000)	32.4% (23/69)	31 % (13/40)	0.01	0.92
Low Income (<20,000)	14.1% (10/69)	14.2% (6/40)	0.00	0.98
Years of Education	M=14.22 SD=2.84	M= 14.52 SD= 2.80	T= .54	0.58
Marital Status				
Single	23.9% (17/71)	21.4% (9/42)	0.01	0.93
Married	59.1% (42/71)	64.3% (27/42)	0.12	0.76
No Longer Married	29.5% (12/71)	14.3% (6/42)	0.01	0.92
Importance of Religion				
Highly Important	39.4% (28/71)	45.2% (19/42)	0.17	0.68
Moderately Important	39.4% (28/71)	50% (21/42)	0.81	0.37
Slightly Important	11.3% (8/71)	4.8% (2/42)	0.70	0.40

Not At All Important	8.5% (6/71)	0% (0/42)	2.25	0.13
Attendance of Religious Services				
Attend at Least Once a Month	54.9% (39/71)	57.1% (24/42)	0.00	0.97
Denomination[b]				
Protestant	16.9% (12/71)	11.9% (5/42)	0.20	0.66
Catholic	83.1% (59/71)	88.1% (37/42)	0.20	0.66

[a]Met criteria for having an MDD episode between Time 10 and Time 20 using the SADS at Time 20

[b]Individuals who changed denomination between time 10 and time 20 were omitted from the sample

† Statistical trend indicated by $p < .10$

* Statistical significance indicated by $p < .05$

** Statistical significance indicated by $p < .01$

Table 4. Demographics and Rates of Religiosity of Offspring at T 10 and T 20

	Time 10	Time 20	Chi-square	*p*-value
Age	M=29.23	M=37.05	n/a	n/a
	SD=5.40	SD=6.15		
Males	38.9% (44/113)	38.9% (44/113)	n/a	n/a
MDD at Wave[a]	15.0% (17/113)	29.5% (27/113)	2.26	0.13
High Risk[b]	62.8% (71/113)	62.8% (71/113)	0.00	1.00
Anxiety	4.4% (5/113)	11.5% (13/113)	2.96	0.08
Substance Abuse	15.9% (18/113)	8% (9/113)	2.67	0.10
Income				
High Income (>40,000)	20.5% (22/107)	38.5% (42/109)	7.52*	0.01
Medium Income (20-39,000)	37.3% (40/107)	33.0% (36/109)	0.28	0.59
Low Income (<20,000)	42.0% (45/107)	14.6% (16/109)	18.60**	0.00
Years of Education	M= 14.00	M=14.33	T=.96	0.34
	SD= 2.291	SD=2.82		
Marital Status				
Single	35.7% (40/112)	23.0% (26/113)	3.78	0.05
Married	52.6% (59/112)	61.0% (69/113)	1.28	0.26
No Longer Married	11.5% (13/112)	24.7% (28/113)	5.69*	0.02
Importance of Religion				
Highly Important	25.6% (29/113)	41.5% (47/113)	5.73*	0.02
Moderately Important	51.3% (58/113)	43.3% (49/113)	1.14	0.29

Slightly Important	19.4% (22/113)	8.8% (10/113)	4.41*	0.04
Not At All Important	3.5% (4/113)	5.3% (6/113)	0.11	0.75
Attendance of Religious Services				
Attend at Least Once a Month	47.7% (54/113)	55.7% (63/113)	1.13	0.27
Denomination[c]				
Protestant	15% (17/113)	15% (17/113)	0.00	1.00
Catholic	85% (96/113)	85% (96/113)	0.00	1.00

[a]Met criteria for having an MDD episode between Time 2 and Time 10 or between Time 10 and Time 20 using the SADS
[b]Met criteria for High Risk if either parent had MDD
[c]Individuals who changed denomination between time 10 and time 20 were omitted from the sample
* Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 5: Longitudinal
Odds Ratio of Offspring MDD at Time 20 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=113) MDD (Time 20)				Multivariate Model[c] (N=113) MDD (Time 20)			
	OR	CI	$X^{2\,b}$	p	OR	CI	X^2	p
States religion is highly important	.235*	(.060-.927)	4.281	.039.	.253†	(.062-1.035)	3.655	.056
Frequently attends religious ceremony	616	(.222-1.711)	.862	.353	.829	(.308-2.234)	.137	.711
Catholic compared with Protestant	1.366	(.472-3.948)	.331	.565	1.234	(.463-3.292)	.176	1.23

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, and risk group.
[b] Wald's X^2 statistic of significance for logistic regression
[c] Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 6: Main Effects and Interactions for Longitudinal
Odds Ratio of Offspring MDD at Time 20 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=113) MDD (W4/time 20)				Multivariate Model[c] (N=113) MDD (W4/time 20)			
	OR	CI	$X^{2\,b}$	p	OR	CI	$X^{2\,b}$	p
States religion is highly important	.235*	(.060-.927)	4.281	.039	.253†	(.062-1.035)	3.655	.056
Importance × risk-group	.078*	(.008-.811)	4.560	.033	.085*	(.009-.782)	4.740	.029
Frequently attends religious ceremony	.616	(.222-1.711)	.862	.353	.829	(.308-2.234)	.137	.711
Attendance × risk-group	.441	(.052-3.717)	.568	.451	.615	(.172-2.202)	.557	.455
Catholic compared with Protestant	1.366	(.472-3.948)	.331	.565	1.234	(.463-3.292)	.1761	.234
Denomination × risk-group	1.520	(.401-5.763)	.379	.538	1.216	(.380-3.889)	.109	.741

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, and risk group.
[b] Wald's X^2 statistic of significance for logistic regression
[c] Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by $p < .05$

** Statistical significance indicated by $p < .01$

Table 7: High Risk Longitudinal
Odds Ratio of High Risk Offspring MDD at Time 20 by G2 Religiosity at Time 10 [α]

	Univariate Model (N=71) MDD (Time 20)				Multivariate Model[c] (N=71) MDD (Time 20)			
	OR	CI	X^{2b}	p	OR	CI	X^{2b}	p
States religion is highly important	.086*	(.009-.809)	4.604	.032	.094*	(.011-.813)	4.614	.032
Frequently attends religious ceremony	.528	(.152-1.830)	1.014	.314	.700	(.200-2.454)	.311	.577
Catholic compared with Protestant	1.407	(.416-4.755)	.302	.583	1.019	(.340-3.049)	.001	.973

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, risk group and family clustering
[b] Wald's X^2 statistic of significance for logistic regression
[c] Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 8: Low Risk Longitudinal
Odds Ratio of Offspring MDD at Time 20 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=42) MDD (W4/time 20)				Multivariate Model[c] (N=42) MDD (W4/time 20)			
	OR	CI	X^{2b}	p	OR[b]	CI	X^{2b}	p
States religion is highly important	.722	(.022-23.800)	.033	.855	.698	(.011-44.513)	.029	.866
Frequently attends religious ceremony	.986	(.199-4.884)	.000	.986	.905	(.063-12.943)	.005	.941
Catholic compared with Protestant	1.590	(.424-5.964)	.473	.492	1.818	(.224-14.731)	.314	.575

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, risk group and family clustering
[b] Wald's X^2 statistic of significance for logistic regression
[c] Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 9: Time 10 Cross-sectional
Odds Ratio of Offspring MDD at Time 10 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=113) MDD (W3/time 10)				Multivariate Model (N=113) MDD (W3/time 10)			
	OR	CI	$X^{2\,b}$	p	OR^b	CI	$X^{2\,b}$	p
States religion is highly important	2.740	(.798-9.403)	2.567	.109	2.182	(.541-8.795)	1.202	.273
Frequently attends religious ceremony	2.314	(.677-7.905)	1.791	.181	1.632	(.406-6.553)	.476	.490
Catholic compared with Protestant	**.241***	**(.076-.763)**	**5.864**	**.015**	**.272***	**(.074-.998)**	**3.851**	**.05**

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, and risk group.
[b] Wald's X² statistic of significance for logistic regression
[c]Adjusted model: Time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by *p* < .05
** Statistical significance indicated by *p* < .01

TABLE 10: Main Effects and Interactions for Cross-sectional
Odds Ratio of Offspring MDD at Time 10 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=113) MDD (Time 10)				Multivariate Model[c] (N=113) MDD (Time 10)			
	OR	CI	$X^{2\,b}$	p	OR	CI	$X^{2\,b}$	p
States religion is highly important	2.740	(.798-9.403)	2.567	.109	2.182	(.541-8.795)	1.202	.273
Importance × Risk Group	**4.735***	**(1.264-17.742)**	**5.325**	**.021**	**4.028***	**(1.031-15.740)**	**4.015**	**.045**
Frequently attends religious ceremony	2.314	(.677-7.905)	1.791	.181	1.632	(.406-6.553)	.476	.490
Attendance × Risk Group	**2.953†**	**(.852-10.237)**	**2.914**	**.088**	**3.752***	**(1.127-12.491)**	**4.642**	**.031**
Catholic compared with Protestant	**.241***	**(.076-.763)**	**5.864**	**.015**	**.272***	**(.074-.998)**	**3.851**	**.050**
Denomination × Risk Group	1.822	(.596-5.576)	1.106	.580	2.519	(.731-8.674)	2.160	.143

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, and risk group.
[b] Wald's X² statistic of significance for logistic regression
[c]Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by *p* < .05

** Statistical significance indicated by $p < .01$

TABLE 11: High Risk Cross-sectional
Odds Ratio of Offspring MDD at Time 10 by Offspring Religiosity at Time 10 [α]

	Univariate Model (N=71) MDD (Time 10)				Multivariate Model[c] (N=71) MDD (Time 10)			
	OR	CI	$X^{2\,b}$	p	OR[b]	CI	$X^{2\,b}$	p
States religion is highly important	2.998	(.775-11.594)	2.532	.112	2.319	(.567-9.490)	1.369	.242
Frequently attends religious ceremony	**2.925†**	**(.847-10.100)**	**2.880**	**.090**	2.299	(.615-8.598)	1.531	.216
Catholic compared with Protestant	.453	(.110-1.867)	1.202	.273	.631	(.139-2.863)	.356	.551

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, and risk group.
[b] Wald's X² statistic of significance for logistic regression
[c] Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 12: Time 10 Cross-sectional
Odds Ratio of Offspring MDD at Time 10 by Offspring Religiosity at Time 10
Controlling for Social Functioning [α]

	Univariate Model (N=113) MDD (W3/time 10)				Multivariate Model[c] (N=113) MDD (W3/time 10)			
	OR	CI	$X^{2\,b}$	p	OR[b]	CI	$X^{2\,b}$	p
States religion is highly important	**3.619***	**(.061-1.035)**	**4.732**	**.030**	3.072	(.807-11.700)	2.707	.100
Frequently attends religious ceremony	2.367	(.710-7.894)	1.791	.161	1.763	(.479-6.483)	.728	.394
Catholic compared with Protestant	**.164****	**(.053-.510)**	**9.773**	**.002**	**.167****	**(.074-.998)**	**7.035**	**.008**

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, risk group, family clustering, and social functioning.
[b] Wald's X² statistic of significance for logistic regression

[c]Adjusted model: Time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 13: Main Effects and Interactions for Time 10 Cross-sectional Odds Ratio of Offspring MDD at Time 10 by Offspring Religiosity at Time 10
Controlling for Social Functioning [α]

	Univariate Model (N=113) MDD (W3/time 10)				Multivariate Model[c] (N=113) MDD (W3/time 10)			
	OR	CI	$X^{2\,b}$	*p*	OR[b]	CI	$X^{2\,b}$	*p*
States religion is highly important	**3.619***	**(.061-1.035)**	**4.732**	**.030**	3.072	(.807-11.700)	2.707	.100
Importance × Risk Group	**5.357***	**(1.311-21.899)**	**5.459**	**.019**	**3.556†**	**(.812-15.564)**	**2.836**	**.092**
Frequently attends religious ceremony	2.367	(.710-7.894)	1.791	.161	1.763	(.479-6.483)	.728	.394
Attendance × Risk Group	**4.522***	**(1.348-15.166)**	**5.973**	**.015**	**3.464†**	**(.942-12.745)**	**3.495**	**.062**
Catholic compared with Protestant	**.164****	**(.053-.510)**	**9.773**	**.002**	**.167****	**(.074-.998)**	**7.035**	**.008**
Denomination × Risk Group	1.402	(.435-4.519)	.321	.571	.922	(.258-3.298)	.016	.901

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, risk group, family clustering, and social functioning.
[b] Wald's X² statistic of significance for logistic regression
[c]Adjusted model: Time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
Significant at the level of a trend indicated by p<.1
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

Table 14: High Risk Time 10 Cross-sectional
Odds Ratio of High Risk Offspring MDD at Time 10 by G2 Religiosity at Time 10
Controlling for Social Functioning [α]

	Univariate Model (N=71) MDD (Time 10)				**Multivariate Model**[c] (N=71) MDD (Time 10)			
	OR	**CI**	**X^{2b}**	**p**	**OR**	**CI**	**X$^{2\,b}$**	**p**
States religion is highly important	**3.806†**	**(.855-16.945)**	**3.078**	**.079**	2.843	(.596-13.549)	1.720	.190
Frequently attends religious ceremony	3.053	(.800-11.652)	2.666	.102	2.267	(.541-9.496)	1.254	.263
Catholic compared with Protestant	.260	(.051-1.318)	2.646	.104	.367	(.067-2.019)	1.327	.249

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, risk group and family clustering
[b] Wald's X² statistic of significance for logistic regression
[c]Adjusted model: time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
†Significant at the level of a trend indicated by p<.1
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 15: Time 20 Cross-sectional
Odds Ratio of G2 MDD at Time 20 by G2 Religiosity at Time 20 [α]

	Univariate Model (N=113) MDD (W4/time 20)				**Multivariate Model**[c] (N=113) MDD (W4/time 20)			
	OR	**CI**	**X$^{2\,b}$**	**p**	**OR**	**CI**	**X$^{2\,b}$**	**p**
States religion is highly important	.832	(.360-1.924)	.184	.668	.961	(.367-2.517)	.006	.936
Frequently attends religious ceremony	.700	(.252-1.941)	.471	.493	.707	(.223-2.245)	.346	.557
Catholic compared with Protestant	1.308	(.381-4.482)	.182	.670	1.286	(.351-4.720)	.144	.704

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, risk group and family clustering
[b] Wald's X² statistic of significance for logistic regression
[c]Adjusted model: Time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by $p < .05$
** Statistical significance indicated by $p < .01$

TABLE 16: Main Effects and Interactions for Time 20 Cross-sectional
Odds Ratio of G2 MDD at Time 20 by G2 Religiosity at Time 20 [α]

	Univariate Model (N=113) MDD (W4/time 20)				Multivariate Model[c] (N=113) MDD (W4/time 20)			
	OR	CI	$X^{2\,b}$	*p*	OR	CI	$X^{2\,b}$	*p*
States religion is highly important	.832	(.360-1.924)	.184	.668	.961	(.367-2.517)	.006	.936
Importance × Risk Group	.896	(.330-2.433)	.046	.829	1.034	(.356-3.005)	.004	.951
Frequently attends religious ceremony	.700	(.252-1.941)	.471	.493	.707	(.223-2.245)	.346	.557
Attendance × Risk Group	.497	(.158-1.566)	1.426	.232	.499	(.152-1.636)	1.317	.251
Catholic compared with Protestant	1.308	(.381-4.482)	.182	.670	1.286	(.351-4.720)	.144	.704
Denomination × Risk Group	1.402	(.511-3.849)	.430	.512	1.383	(.475-4.020)	.354	.552

Note: MDD = major depressive disorder: OR = odds ratio; CI = confidence interval
[α] all models control for sex, age, history of depression, risk group and family clustering
[b] Wald's X² statistic of significance for logistic regression
[c] Adjusted model: Time 10 G2 MDD = Time 10 G2 report of religious importance, Time 10 G2 frequency of attendance, Time 10 G2 religious denomination.
*Statistical significance indicated by *p* < .05
** Statistical significance indicated by *p* < .01

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