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THE RELATIONSHIP BETWEEN RELIGIOSITY AND PSYCHOLOGICAL DISTRESS: A SCALE DEVELOPMENT STRATEGY WITH THE SCL-90-R

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ABSTRACT OF THESIS

THE RELATIONSHIP BETWEEN RELIGIOSITY AND PSYCHOLOGICAL DISTRESS: A SCALE DEVELOPMENT STRATEGY WITH THE SCL-90-R

There are substantial data exploring the link between religiosity and health, yet there is no consensus regarding the appropriate measurement tool for assessing religiosity in health psychology settings. The purpose of this study was to identify a set of items that could serve as a reliable and valid proxy measure of religiosity. Participants included 251 (M=19.02; range = 17-25) young adults who completed self-report measures of religiosity (Intrinsic-Extrinsic/Revised, Quest Scale, Faith Maturity Scale), psychological distress (SCL-90-R), and personality (NEO-PI-R). Individual item pools for religiosity were developed by identifying significant correlations between each of the religiosity measures and the SCL-90-R items. Exploratory factor analyses and item-level analyses were conducted and convergent and discriminant validity were examined for each proposed measure. A group of items were identified that were associated with previously validated measures of religiosity. These religiosity measures were also associated with the personality domains of Openness to Experience and Agreeableness but were not associated with Neuroticism. There was insufficient evidence, however, to conclude that the proposed measures could serve as true proxy measures of religiosity as they were more strongly associated with Neuroticism than the religiosity measures from which they were derived. The results of this study underscore the importance of the religiosity construct to health-related outcomes, yet much work remains to delineate the optimal means of measuring the construct and the specific pathways by which religiosity may exert its influence on both mental and physical health.

KEYWORDS: Religiosity, Psychological Distress, Personality, Scale Construction

John M. Salsman

July 8, 2002

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A SCALE DEVELOPMENT STRATEGY WITH THE SCL-90-R

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THESIS

John M. Salsman

The Graduate School
University of Kentucky
2002

THE RELATIONSHIP BETWEEN RELIGIOSITY AND PSYCHOLOGICAL DISTRESS:
A SCALE DEVELOPMENT STRATEGY WITH THE SCL-90-R

THESIS

A thesis submitted in partial fulfillment
of the requirements for the degree of Master of Science in the
College of Arts and Sciences
at the University of Kentucky

By

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2002

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TABLE OF CONTENTS

Acknowledgements	iii
List of Tables	vi
List of Files	vii
Chapter One: Introduction	
Religion and Health.....	1
Spirituality and Religiosity.....	3
Assessing Religiosity.....	4
Hypotheses.....	6
Chapter Two: Methods	
Participants.....	8
Procedure.....	8
Data Analysis and Preparation.....	8
Assessment Instruments.....	9
Personality.....	9
Religiosity.....	9
Psychological Distress.....	11
Chapter Three: Results	
Descriptive Statistics.....	12
Identification of Initial Item Pool.....	12
Exploratory Factor Analyses.....	13
Item-Level Analyses.....	15
Convergent and Discriminant Validity.....	15
Chapter Four: Discussion	
Main Findings.....	17
Additional Findings.....	18
Study Limitations.....	20
Conclusions.....	20

Appendix	
Tables.....	22
References.....	32
Vita.....	36

LIST OF TABLES

Table 1, Descriptive Statistics for Study Measures.....	22
Table 2, Intercorrelations of Religiosity Measures with the SCL-90-R.....	23
Table 3, Summary of Factor Loadings for SCL-90-R Items Significantly Correlated with Intrinsic Religiosity.....	24
Table 4, Intercorrelations of Intrinsic Religiosity and the Proposed Intrinsic Religiosity Measure.....	25
Table 5, Summary of Factor Loadings for SCL-90-R Items Significantly Correlated with Extrinsic Religiosity.....	26
Table 6, Summary of Factor Loadings for SCL-90-R Items Significantly Correlated with the Quest Scale.....	27
Table 7, Summary of Factor Loadings for SCL-90-R Items Significantly Correlated with the Faith Maturity Scale–Total Score.....	28
Table 8, Intercorrelations of Faith Maturity and the Proposed Faith Maturity Measure..	29
Table 9, Coefficient Alphas and Average Inter-Item Correlations for the Factor- Analytically Derived Measures.....	30
Table 10, Correlations Between NEO-PI-R Personality Domains and Study Measures.....	31

LIST OF FILES

JMS-Thes.pdf..... 198KB

Chapter One

Introduction

The vast majority of people seek to maximize pleasure and minimize pain in everyday life and, when experiencing psychological distress, they use a wide variety of coping styles, some more effective than others. When confronted with stressful life events, some individuals attempt to cope by exercising, others by attempting to manage their time more efficiently, while others use prayer, meditation, or social support as coping strategies. The responses that are the most adaptive tend to be associated with a reduction in the level of psychological distress experienced by the individual and an increase in positive health outcomes. Coping strategies associated with religious beliefs or religious behaviors are frequently associated with positive health benefits.

Religion and Health

Religion and issues of spirituality play an important role in the lives of many individuals. Shafranske (1996) reports recent surveys that indicate 93 percent of Americans identify with a religious group (Kosmin & Lachman, 1993) and over 80 percent report that religion is “fairly” or “very” important in their lives (Gallup, Jr., 1995, p. 72). In addition, Hoge notes that in 1993, the Gallup Poll Monthly reported that 71% of individuals indicated that they were a part of a church or synagogue, and since 1944 the proportion of the population professing belief in God has remained around 95% (1996). While these survey respondents probably represent a wide range of religious beliefs and behaviors, these results also serve to underscore the prominent role that spiritual and religious issues play in the lives of many individuals.

Numerous studies have emphasized the positive health benefits associated with a religious lifestyle. In a narrative review article, Seybold and Hill (2001) summarized some of the positive effects of religion and spirituality on physical health. They noted that religion-spirituality has been shown to be associated with the following effects: lower - systolic and diastolic blood pressure, cholesterol levels, and surgery-related stress; lower rate of – heart disease, cirrhosis, emphysema, myocardial infarction, stroke, kidney failure, cancer mortality, cardiac surgery mortality, and overall mortality; decrease in chronic pain; and increase in positive health habits and longevity. In addition, Gartner (1996) reviewed studies that showed positive associations between religion/spirituality and well-being, marital satisfaction, and general psychological functioning, as well as negative associations with suicide, delinquency,

criminal behavior, and drug and alcohol use. While the salutary effects of religion and spirituality on physical and mental health are notable, additional research has focused on the role that coping styles play within the religion-health association.

Pargament (1997) has examined the religion-health linkage in studies that identify different approaches to coping within the religious framework. He proposed three distinct styles of coping – collaborative, self-directing, and deferring. He noted that “collaborative” coping characterizes individuals who share issues of responsibility and control with God when dealing with stressors. He contrasted this approach with the “self-directing” approach, where individuals rely solely on themselves in the coping process, and the “deferring” approach where individuals passively defer their responsibility for coping to God (1997). Based upon empirical evidence, he concluded that the collaborative approach was the most adaptive of the three. “Research indicates that people who involve God more as a partner in coping with stress have lower levels of anxiety (Schaefer & Gorsuch, 1991), better physical and mental health (McIntosh & Spilka, 1990), and greater psychosocial competence (Hathaway & Pargament, 1991; Pargament et al., 1988)” (as cited in Pargament, 1996, p.220).

Although research evidence supporting the religion-health link is compelling, four caveats should be considered. First, many of these studies fail to assess adequately the religiosity/spirituality construct, using only a few items to measure aspects such as religious affiliation, frequency of prayer or meditation, religious service attendance, and importance of religious or spiritual beliefs (Thoresen, 1999). Second, it is a fallacy to generalize from research that reveals a statistically significant association between two variables to asserting statements of causal connections between two variables without considering more extensive statistical designs (i.e. path analysis) and experimental procedures (i.e. experimental research designs that consist of randomization and manipulation of the independent variable). Third, although these results of the religion-health connection are meaningful and compelling, they do not provide information about why the association is present or what mechanism is accounting for the health benefits. As in the second caveat, a stronger experimental procedure would be necessary in order to arrive at these specific conclusions. Fourth, the relationship between religion and health, while often beneficial, is not always beneficial. Sometimes religion can introduce a maladaptive factor into the coping process. For example, Seybold and Hill (2001) noted that religion/spirituality can sometimes be problematic when it is strictly extrinsic or self-beneficial, authoritarian or blindly

obedient, or superficially literal. In addition, these features of religious belief are often associated with intergroup conflict and violence, child abuse and neglect, and false perceptions of control with resulting medical neglect. In spite of this, the authors concluded that there is a general beneficial effect of religion on mental health.

Spirituality and Religiosity

Before proceeding further, it is necessary to discuss two terms that have been used somewhat interchangeably thus far, spirituality and religiosity (or religion, religious, religiousness). There is no clear consensus on the distinction between these terms. Some people see these terms as polar opposites, while others view them as having overlapping dimensions. Worthington and Sandage (2001) have noted that religion and spirituality are intertwined for most people, but others separate spirituality from religion, grounding it in ecology, humanism, or “New Age” spirituality. Individuals who view themselves as spiritual but not religious are more of a modern development and have contributed to the polarization of spirituality and religion (Wulff, 1997). This polarization has led to three particularly salient contrasts (Zinnbauer et al., 1999). First, religion is considered external and institutional, whereas spirituality is considered personal and relational. Second, religion is viewed as a static, substantive entity, whereas spirituality is dynamic and functional. Third, religion is depicted negatively, whereas spirituality is depicted positively. These characterizations, however, fail to clarify the nature of the two constructs.

In an attempt to delineate the nature of these constructs, Zinnbauer and colleagues (1997) conducted a study with a heterogeneous sample to assess how individuals define their own religiousness and spirituality. They arrived at three main conclusions. First, religiousness and spirituality describe somewhat different concepts. Participants’ definitions of religiousness included both organizational/institutional beliefs and practices (church membership, commitment to specific belief system, etc.) and personal beliefs (belief in God or higher power), whereas spirituality was most often defined in personal or experiential terms (belief in God or higher power or having a relationship with God or a higher power). Second, religiousness and spirituality were not fully independent (*italics added*). There was a modest, but significant correlation between self-ratings of religiousness and spirituality ($r = .21$). 74% of respondents identified themselves as spiritual and religious, and 19% of respondents identified themselves as spiritual but not religious. Third, there were group differences in self-rated religiousness and

spirituality and substantial variability in the definitions provided for these terms. In sum, although the data indicated the participants did not view the terms “religiousness” and “spirituality” as synonymous, they did not view the terms as mutually exclusive either.

Even researchers fail to agree on how these terms should be operationalized. On one hand, Koenig, McCullough and Larson (2001) suggest definitions that emphasize the differences between the terms. “Religion is an organized system of beliefs, practices, rituals, and symbols designed (a) to facilitate closeness to the sacred or transcendent (God, higher power, or ultimate truth/reality) and (b) to foster an understanding of one’s relationship and responsibility to others in living together in a community” (p.18). “Spirituality is the personal quest for understanding answers to ultimate questions about life, about meaning, and about relationship to the sacred or transcendent, which may (or may not) lead to or arise from the development of religious rituals and the formation of community” (p.18). On the other hand, Hill and colleagues (2000) propose definitional criteria that emphasize the similarities between the terms. They suggest that both religion and spirituality include “the subjective feelings, thoughts, and behaviors that arise from a search for the sacred” (p.68). In addition, “religion (only) may (or may not) include a search for non-sacred goals (such as social identity, affiliation, health, or wellness) in a context that has as its primary goal the facilitation of a search for the sacred” (p.68). Further, “religion involves the means and methods (e.g., rituals or prescribed behaviors) of the search for the sacred that receive validation and support from within an identifiable group” (p.69). From this perspective, religion and spirituality can co-occur, and spirituality is a “central and essential function” of religion (Hill et al., 2000). Similarly, Zinnbauer and colleagues (1997) argue that a broadband understanding of religion is necessary to provide continuity with previous research in this area, avoid the danger of polarizing the terms spirituality and religion, and avoid tying future study to potential ephemeral cultural changes. “Religion in its broadband sense includes both the personal and the institutional, the traditional and the progressive, the helpful and the harmful” (p. 563). It is this broadband sense of the term “religiosity” that will be used in the context of this study.

Assessing Religiosity

Attempts to measure the construct of religiosity are complicated by the variety in which religious thought and behavior is expressed throughout diverse cultures and the lack of conceptual clarity as discussed above. In spite of this, there is a relatively long history of

attempts to measure this construct as psychologists have recognized the central role that religion serves in the human experience. Frequent attempts at assessing religiosity, as mentioned above, typically involve asking a few questions about denominational affiliation, frequency of religious service attendance, frequency of prayer or meditation, or importance of religious beliefs. This approach is inadequate due to the poor psychometric properties inherent in the measurement method and the possibility of spurious results.

More recently, more comprehensive views have sought to recognize and identify the multi-dimensional, or multi-faceted nature of religiosity. A working group of experts supported by the Fetzer Institute and the National Institute on Aging (NIA) identified 12 domains of religiousness/spirituality that were connected to health outcomes and held promise for future research: daily spiritual experiences, meaning, values, beliefs, forgiveness, private religious practices, religious/spiritual coping, religious support, religious/spiritual history, commitment, organizational religiousness, and religious preference (Fetzer Institute/NIA, 1999). Other researchers (Koenig et al., 2001) have identified similar dimensions of religion: religious belief, religious affiliation or denomination, organizational religiosity, nonorganizational religiosity, subjective religiosity, religious commitment/motivation, religious “quest”, religious experience, religious well-being, religious coping, religious knowledge, and religious consequences. Currently, however, there exists no “gold standard” within the research literature for assessing religiosity in a comprehensive fashion and adequate psychometric properties have yet to be demonstrated for many of the existing measures (Gorsuch, 1988).

There are, however, measures of religiosity that assess particular dimensions of the construct, while demonstrating adequate psychometric properties. The intrinsic-extrinsic tradition (Allport & Ross, 1967; Gorsuch & Venable, 1983; Gorsuch & McPherson, 1989), religion-as-quest (Batson & Schoenrade, 1991; Batson et al., 1993), and the Faith Maturity Scale (FMS; Benson et al. 1993) all have theoretical and empirical merit. (For individuals interested in a more comprehensive discussion of the various religiosity instruments, Hill and Hood (1999) provide a thorough overview of the existing measures.)

Gordon Allport (1950) was one of the first to try and operationalize the construct of religiosity. He proposed that religious orientation could be conceptually understood on a continuum, with an extrinsic orientation occupying one end of the continuum and an intrinsic orientation the other. He distinguished between flagrantly utilitarian motivations for religious

behaviors (extrinsic) and motivations that arise from goals set forth by religious traditions themselves (intrinsic). Allport and Ross (1967) developed the Religious Orientation Scale (ROS) to measure the extrinsic and intrinsic religious orientations, commonly understood as “using” versus “living” one’s religion. Interestingly, in spite of the initial theoretical belief that these two orientations occupied opposite ends of a single continuum, research evidence pointed to the independence of the extrinsic and intrinsic scales (Wulff, 1997). Although critics have emphasized methodological and theoretical problems with the intrinsic-extrinsic framework (Kirkpatrick & Hood, 1990), it remains a popular conceptual framework for assessing religiosity and continues to be used in substantive research (Genia, 1996; Wulff, 1997).

In addition to the intrinsic and extrinsic religious orientations, a third motivational construct of religious orientation, quest, was posited by Batson and Schoenrade (1991). The Quest Scale was developed to measure “the degree to which an individual’s religion involves an open-ended, responsive dialogue with existential questions raised by the contradictions and tragedies of life” (Batson, Schoenrade, & Ventis, 1993, p. 169). This construct was theoretically viewed as distinct from the extrinsic and intrinsic orientations, and research has demonstrated the independence of the quest orientation from both the extrinsic and intrinsic orientations (Batson & Schoenrade, 1991).

Lastly, the Faith Maturity Scale (Benson et al. 1993) was designed to assess “the degree to which a person embodies the priorities, commitments, and perspectives characteristic of vibrant and life-transforming faith” (p.3). The FMS contains both a vertical dimension, assessing the emphasis a person places on his/her relationship with transcendent reality, and a horizontal dimension, assessing the emphasis a person places on serving humanity. In contrast to the intrinsic, extrinsic, and quest orientations, the FMS is not considered a motivational construct of religiosity, rather it emphasizes values, behavior, and the integration of faith into action.

Hypotheses

To summarize thus far, various people cope with stressors in a variety of ways, and religion often serves as a variable that impacts adjustment and health outcomes. Given the importance of religion in the lives of many Americans, and the utility of religious beliefs in the realm of stress, coping, and adjustment, it would be beneficial to have a reliable and efficient means of assessing individuals’ levels of religiosity in health psychology settings.

Therefore, the purpose of this study was to provide an initial investigation into the

development of religiosity proxy measures from within the SCL-90-R. Given that the SCL-90-R items are symptoms of psychological distress, it was expected that measures of religiosity would be negatively correlated with many of these individual items. Consequently, this study attempted to find a group of items that were associated with religiosity and could serve as reliable and efficient means of assessing individuals' levels of religiosity in health psychology settings. If these scales could be successfully developed, they would provide a means to access a wide "database" of information that could be utilized to investigate further the religion-health linkage among individuals who have already taken the SCL-90-R in various medical and psychiatric settings.

The NEO-PI-R was used as a validation tool in this study, as the domains of Openness to Experience and Agreeableness have direct relevance to the study of the construct of religiosity. McCrae writes that Openness to Experience is probably the "most relevant" dimension of the FFM to the study of religion (McCrae, 1996; McCrae & Costa, 1997), and research also indicates that religious people generally score higher on Agreeableness (Streyffeler & McNally, 1998). Finally, there is a lack of consistent evidence supporting a significant association between religiosity and Neuroticism. Given these findings, significant positive correlations will be expected between Openness to Experience and Agreeableness with the religiosity measures. Hypothetically, these factors should provide evidence of convergent validity by being positively correlated with the original religiosity measures as well as the resulting proxy measure of religiosity. In addition, it is expected that Neuroticism will not be correlated with the religiosity measures or the proxy measures of religiosity, thus providing a measure of discriminant validity.

As a result, there were two hypotheses guiding this study. First, a proxy measure (or measures) of religiosity is/are embedded within the SCL-90-R. More specifically, individual items of the SCL-90-R were expected to be significantly associated with religiosity measures, and these items could then be subsequently refined to provide reliable and valid proxy measures of religiosity. Second, this/these measure(s) would be related to other constructs in predictable ways (convergent and discriminant validity). More specifically, the religiosity measures would be positively correlated with Agreeableness and Openness to Experience, and uncorrelated with Neuroticism, and the proxy measures would demonstrate this same pattern of relationships with the respective NEO-PI-R domains.

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Chapter Two

Method

Participants

Data were collected from a sample of young adults enrolled at the University of Kentucky. There were 251 individuals who participated in the study ($M=19.02$; range = 17-25), 110 males and 141 females. These individuals received course credit for their participation.

Procedure

Each of the young adults who participated in the project completed a collection of self-report instruments at one, two-hour setting. They were first provided an informed consent and were instructed to read through it and sign their name before beginning the questionnaires. Aside from relevant demographic information (age, gender, year in school), no identifying information other than the last six digits of their student identification number was collected in order to insure confidentiality.

Data Analysis and Preparation

The first step in the data analysis process was to develop an initial item pool through a criterion-keyed approach by examining statistically significant correlations between the SCL-90-R and the individual religiosity measures. Each set of items for its respective religiosity dimension was then analyzed individually through exploratory factor analytic procedures. Next, item-level analyses were conducted to provide a preliminary evaluation of the properties of the religiosity proxy measures. Finally, a preliminary evaluation of the convergent and discriminant validity of the religiosity proxy measures was conducted using the NEO-PI-R as a validation tool.

All statistical analyses were completed using the Statistical Package for the Social Sciences, Release 10.1.0 (SPSS Inc., 1989-2000). The criterion for statistical significance was set at $p < .05$. Given that the Pearson Correlation Coefficient was the primary effect size of interest, at an alpha level of .05, power with the present sample size was .89 for detecting an effect size of .20 (Cohen & Cohen, 1983).

There were two types of missing data in this study: sporadic missing data, and records where complete questionnaires were missing. For the SCL-90-R and the NEO-PI-R, sporadic missing data constituted less than 1% of all items with no more than 2.1% of data missing for any one item. Missing data from the SCL-90-R and the NEO-PI-R were addressed according to

the protocols outlined in their respective administration manuals (Derogatis, 1992; Costa & McCrae, 1992). For the religiosity questionnaires, sporadic missing data constituted less than 5% of all items with no more than 9% of data missing for any one item. Missing data from the religiosity measures were addressed by mean substitution.

There were 18 cases (7%) excluded from subsequent data analyses due to a lack of a valid SCL-90-R profile or religiosity profile. Since the majority of these cases (n=14) were excluded due to failing to complete any of the religiosity measures, a dummy variable was created in order to identify whether there were differences in participants who completed some or all of the religiosity measures versus participants who did not complete any of the items from the religiosity measures. A t-test for independent samples was then conducted which revealed no significant differences on mean scores from the SCL-90-R or the NEO-PI-R domains.

Assessment Instruments

Personality.

The NEO Personality Inventory-Revised (NEO-PI-R) was used to assess individual personality traits. The NEO-PI-R, developed by Costa & McCrae (1992), is a 240-item personality inventory based upon the Five Factor Model of Personality. It consists of five broad domains, or factors, that conceptualize personality at its broadest level (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness), and six facet scales for each factor, designed to capture more specific traits. Items are answered on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). Cronbach's alphas in this study for the five personality domains ranged from .88 (Openness to Experience and Agreeableness) to .93 (Extraversion).

Religiosity.

The Intrinsic/Extrinsic-Revised (I/E-R) Scale, the Quest Scale (QS), and the Faith Maturity Scale (FMS) were all used to assess different aspects or dimensions of the construct, religiosity. The Intrinsic/Extrinsic-R Scale (I/E-R) is an offspring of the Religious Orientation Scale (ROS), originally developed by Allport and Ross (1967). Gorsuch and Venable (1983) revised the ROS in order to target individuals at all education levels. This revision resulted in an "Age-Universal" I-E scale that measured intrinsic and extrinsic motivations and subdivided the extrinsic subscale into personally oriented (Ep) and socially oriented (Es) extrinsic motivations. A few years later, Gorsuch and McPherson (1989) revised the scale again, including a total of 14

items measured on a 5-point Likert scale format ranging from 1 (I strongly disagree) to 5 (I strongly agree). The intrinsic orientation (i.e. “I try hard to live all my life according to my religious beliefs.”) is measured by 8 items (3 reversed scored), and the extrinsic personal (i.e. “Prayer is for peace and happiness.”) and extrinsic social (i.e. “I go to church mostly to spend time with my friends.”) are measured by three items each. Cronbach’s alphas for this study were as follows: Intrinsic, .83; Extrinsic personal, .72; Extrinsic social, .68; and Extrinsic combined (personal and social), .71.

The Quest Scale, developed by Batson and Schoenrade (1991), was also developed to measure a motivational construct of religious orientation. Quest was viewed as distinct from the extrinsic and intrinsic orientations, and was designed to measure an “open-ended, active approach to existential questions that resists clear cut, pat answers” (Batson and Schoenrade, 1991, p. 416). The Quest Scale consists of 12 items that are answered using a 9-point Likert scale format ranging from 1 (strongly disagree) to 9 (strongly agree). Three areas within the quest orientation are emphasized and are represented by four questions each from the scale - existential question items (i.e. “I was not very interested in religion until I began to ask questions about the meaning and purpose of my life.”), doubting as positive items (i.e. “For me, doubting is an important part of what it means to be religious.”), and openness to change items (i.e. “As I grow and change, I expect my religion also to grow and change.”). Based upon data from two samples of 200 “Christian-background”, University of Kansas undergraduates who were “at least moderately interested in religion,” Cronbach’s alphas were .69 for the existential questions subscale, .73 for the doubting as positive subscale, .68 for the openness to change subscale, and .83 for the total quest score.

The Faith Maturity Scale, developed by Benson, Donahue, and Erickson (1993), emphasizes values and behavioral manifestations or indicators of faith rather than focusing on strict assent to or belief in particular doctrines (i.e. “I am concerned that our country is not doing enough to help the poor.” “I talk with other people about my faith.”). In contrast to the I/E-R and the QS, the FMS emphasizes substance more than process by focusing on the integration of conceptually derived commitments, priorities and actions (Benson et al. 1993). It consists of 38 items that are answered on a 7-point Likert scale ranging from 1 (never true) to 7 (always true), and includes five items that are reverse scored. This scale yields two subscale scores, a vertical dimension (FMS-V) and a horizontal dimension (FMS-H), as well as a global faith-maturity

score (FMS-T). The FMS-V assesses the degree to which a person emphasizes the relationship between the self and a transcendent reality (i.e. “My faith helps shape how I think and act each and every day.”), and the FMS-H assesses the degree of emphasis a person places on serving human kind in terms of prosocial acts and values (i.e. “I try to apply my faith to political and social issues.”). Cronbach’s alphas in this study were FMS-V = .93, FMS-H = .83, and FMS-T = .89.

Psychological Distress.

The Symptom Checklist-90-Revised (SCL-90-R) is a 90-item self-report inventory designed to assess current levels of psychological symptoms and symptom patterns in samples ranging from “normal” individuals, through medical patients, to psychiatric patients (Derogatis, 1992). Each item is a description of a psychological symptom and is rated by respondents on a five-point Likert scale (0 to 4) as having caused them no discomfort to extreme discomfort during the past week. Nine primary factors are represented: (1) Somatization, (2) Obsessive-Compulsive, (3) Interpersonal Sensitivity, (4) Depression, (5) Anxiety, (6) Hostility, (7) Phobic Anxiety, (8) Paranoid Ideation, and (9) Psychoticism. In addition, there are three indices of general psychological distress: (1) Global Severity Index, (2) Positive Symptom Distress Index, and (3) Positive Symptom Total. Derogatis (1992) reported internal consistency and test-retest reliabilities for the nine primary dimensions. For this study, Cronbach’s alphas ranged from .79 (Paranoid Ideation) to .90 (Depression). Of particular interest for this study was the Global Severity Index (GSI) which Derogatis recommended using when a single summary measure for the current level or depth of psychological distress was needed (1992).

Chapter Three

Results

Descriptive Statistics

After screening the data and eliminating cases with invalid profiles (described above), a sample of 233 participants (99 men, 134 women) was used for the data analysis. Although there were 233 participants who completed at least one of the religiosity measures, some of the participants skipped one or more of the religiosity measures. Consequently, the size of the sample that completed individual religiosity measures ranged from $N = 217$ for the extrinsic scale of the I/E-R to $N = 226$ for the intrinsic scale of the I/E-R. On average, this group was 19.0 years of age ($SD = 1.4$, range = 17-25). Descriptive statistics for each of the study measures are reported in Table 1. The sample had a mean GSI of 0.70 ($SD = 0.57$, range = 0.01-2.88), similar to the adolescent non-patient norms reported by Derogatis (1992). The results for the nine primary symptom dimensions of the SCL-90-R were also similar to the adolescent non-patient norms. Means for each of the religiosity measures were lower than reported means (Batson & Schoenrade, 1991; Gorsuch & McPherson, 1989; Benson et al. 1993). Results for each of the five domain scores of the NEO-PI-R were similar to published norms for college-age students (Costa & McCrae, 1992), although the mean score of 104.69 for the Conscientiousness domain was .49 standard deviations below the mean of 114.5 reported by Costa and McCrae for college-age students.

Identification of Initial Item Pool

Significant correlations were identified using an alpha of .05 and examining the bivariate correlations between the SCL-90-R items and the individual religiosity measures. Based upon the correlations of the SCL-90-R subscales and the GSI with the religiosity measures, as seen in Table 2, the nature of the individual item correlations with the intrinsic religiousness and faith maturity scales were expected to be negative, whereas the correlations for the extrinsic religiousness and quest scales were expected to be positive. Subsequent bivariate correlations were examined for the 90 Symptom Checklist items with the intrinsic and extrinsic subscales of the I/E-R, the Quest Scale and the FMS. Nineteen SCL-90-R items had statistically significant negative correlations with intrinsic religiousness, with correlations ranging from $r = -.13$ to $-.22$. Seven SCL-90-R items had statistically significant positive correlations with extrinsic religiousness, with correlations ranging from $r = .14$ to $.20$. Thirteen SCL-90-R items had

statistically significant positive correlations with religious quest, with correlations ranging from $r = .13$ to $.21$. Lastly, thirteen SCL-90-R items had statistically significant negative correlations with the total faith maturity scale score, with correlations ranging from $r = -.14$ to $-.20$.

Items that were significantly correlated with multiple religiosity measures included the following: 6-Feeling critical of others, 15-Thoughts of ending your life, 29-Feeling lonely, 32-Feeling no interest in things, 38-Having to do things very slowly to insure correctness, 52-Numbness or tingling in parts of your body, 59-Thoughts of death or dying, 68-Having ideas or beliefs that others do not share, 81-Shouting or throwing things, 88-Never feeling close to another person.

Exploratory Factor Analyses

Each of these four sets of items was then subjected to a series of exploratory factor analyses in order to determine the underlying factor structure. The number of eigenvalues greater than one and an inspection of the scree test served to guide the selection of factors that were extracted for each set of items. For an item to be included on a factor, it had to have a minimum loading of $.40$ on its primary factor. A principal components analysis with an orthogonal (varimax) rotation was performed for each set of items followed by a principal components analysis with a correlated (oblique) rotation for the same set of items. For comparison purposes, principal axis factoring with separate varimax and oblique rotations was conducted with each set of items as well in order to assess the factor structure more thoroughly. As this study served to evaluate the data in a preliminary manner, instrument refinement was not emphasized.

First, for the set of 19 items significantly correlated with the intrinsic religiousness subscale of the I/E-R, four factors were extracted and rotated, accounting for 57% of the variance. Table 3 presents the results of the principal components analysis with varimax rotation for this set of items. The factor structure and item composition obtained were similar across each of the extraction methods and rotations. Subscales were created by adding the raw scores for all of the items from each factor, and a total score was created by adding all of the item raw scores together. The first factor consisted of 5 items and measured symptoms characteristic of fear and anxiety. The second factor consisted of 6 items and measured symptoms characteristic of agitation and resentment. The third factor consisted of 4 items and measured symptoms characteristic of isolation and depression. The fourth factor consisted of 4 items and measured

symptoms characteristic of thought disturbance. The intercorrelations among subscales ranged from $r=.44$ to $.62$, and the subscale correlations with the total score ranged from $r=.76$ to $.88$ (see Table 4). Since all of the statistically significant correlations of the SCL-90-R items with the intrinsic religiousness subscale were negative, all of the items for the proposed intrinsic scale were reverse-scored. As a result, high scores on this scale were associated with higher intrinsic religiosity.

Second, for the set of 7 items significantly correlated with the extrinsic religiousness subscale of the I/E-R, one factor was extracted, accounting for 41% of the variance. This factor assessed symptoms related to interpersonal alienation. Table 5 presents the results of the principal components analysis for this set of items. The factor structure and item composition obtained was invariant across each of the extraction methods. A total score was created by adding all of the item raw scores together. These items were not reverse-scored since all of the statistically significant correlations of the SCL-90-R items with the extrinsic religiousness subscale were positive. Bivariate correlations between the proposed extrinsic measure and the parent scale were all statistically significant at $p<.01$: Extrinsic-Personal $r=.18$, Extrinsic-Social $r=.24$, Extrinsic-Total $r=.27$. As a result, high scores on this scale are associated with higher extrinsic religiosity.

Third, for the set of 13 items significantly correlated with the quest scale, one factor was extracted, accounting for 44% of the variance. This factor assessed symptoms related to anxiety and depression. Table 6 presents the results of the principal components analysis for this set of items. The factor structure and item composition obtained was similar across each of the extraction methods. A total score was created by adding all of the item raw scores together. These items were not reverse-scored either since all of the statistically significant correlations of the SCL-90-R items with the quest scale were positive. Bivariate correlations between the proposed quest measure and the parent scale were all statistically significant at $p<.01$: Openness to Change $r=.21$, Existential Questions $r=.23$, Doubting as Positive $r=.18$, and Quest-Total Score $r=.25$. As a result, high scores on this scale are associated with higher religious quest.

Lastly, for the set of 13 items significantly correlated with the FMS total score, two factors were extracted and rotated, accounting for 53% of the variance. Table 7 presents the results of the principal components analysis with varimax rotation for this set of items. The factor structure and item composition obtained was similar across each of the extraction methods

and rotations. Subscales were created by adding the raw scores for all of the items from each factor, and a total score was created by adding all of the item raw scores together. The first factor consisted of 7 items and measured symptoms characteristic of depression and interpersonal sensitivity. The second factor consisted of 6 items and measured symptoms characteristic of hopelessness and hostility. The intercorrelations among subscales was $r=.57$, and the subscale correlations with the total score ranged from $r=.83$ to $.93$ (see Table 8). Since all of the statistically significant correlations of the SCL-90-R items with the FMS total score were negative, all of the items for the proposed faith maturity scale were reverse-scored. As a result, high scores on this scale were associated with higher faith maturity.

Item-Level Analyses

Item-level analyses were conducted to provide more detailed information about the proposed scale properties. More specifically, coefficient alphas, and intra- and inter-item correlations were examined. A coefficient alpha of $.80$, and average inter-item correlations within the range of $.15$ - $.50$ were used as guidelines (Clark & Watson, 1995). Table 9 reports these values for each of the scales identified from the preceding factor analyses. Although all of the average inter-item correlations fell in the appropriate range, preliminary results based upon the coefficient alpha statistic suggest that further refining of the “extrinsic” measure and factors 2 and factors 3 of the “intrinsic” measure may be necessary in order to obtain adequate reliability. Regarding evaluation of subscales, Clark and Watson (1995) suggest that the intrasubscale item correlations should be systematically higher (e.g. $.20$) than the intersubscale item correlations in order to justify use of subscales in a measure. They suggest abandoning subscales in favor of a single overall score if this condition cannot be met. Given these guidelines, a single overall score for the “intrinsic” and “faith maturity” measures may be more useful.

Convergent and Discriminant Validity

A preliminary evaluation of the proposed scales’ convergent and discriminant validity was conducted. The scales were significantly associated with the criterion measures from which they were developed with effect sizes approaching a moderate magnitude of $.30$ for a Pearson Correlation coefficient (above). Additionally, the NEO-PI-R was utilized as a validation tool with this sample. As expected, Agreeableness and Openness to Experience were associated with religiosity, providing additional indices of convergent validity. Positive correlations were found between Agreeableness and five of the six religiosity scales and between Openness to

Experience and three of the six religiosity scales, respectively (see Table 10). Neuroticism was not significantly associated with religiosity, thus providing an index of discriminant validity.

If the factor-analytically derived measures adequately assessed dimensions of religiosity, then the correlations of these measures with the NEO-PI-R were expected to be similar to the pattern of correlations between the religiosity measures and the NEO-PI-R. The correlations between the factor-analytically derived measures with the three personality domains of Neuroticism, Openness to Experience, and Agreeableness from the NEO-PI-R are also presented in Table 10. Although the relationship between Agreeableness and these measures remains significant for three of the four derived measures, the relationship between Openness to Experience and these measures is not significant. In addition, whereas no significant associations were found between the personality domain of Neuroticism and the religiosity measures, statistically significant associations were found between the factor-analytically derived measures and Neuroticism. Lastly, it should be noted that the relationship between the derived measures and the personality domains of Neuroticism, Agreeableness, and Openness to Experience closely parallels the relationship between the GSI of the SCL-90-R and these three domains.

Chapter Four

Discussion

Main Findings

The purpose of this study was to provide an initial investigation into the development of a proxy measure of religiosity from within the SCL-90-R. There were three noteworthy findings from the present data set. First, religiosity dimensions were negatively associated with indices of psychological distress from the SCL-90-R. More specifically, scores on the intrinsic scale of the I/E-R and the FMS were negatively associated with items from the SCL-90-R. These results indicate that young adults who reported finding greater inherent meaning and purpose in their religious orientation (intrinsic) are likely to experience less fear, anxiety, agitation, resentment, depression, isolation, and thought disturbance. Similarly, those young adults who reported having a mature faith integrated into their everyday lives (faith maturity scale) are likely to experience less depression, hopelessness, hostility, and interpersonal sensitivity. These results are consistent with a growing body of research supporting a positive association between religiosity and lower levels of depression and psychoticism, and an increase in adaptive mental health outcomes (Gartner, 1996).

Second, religiosity dimensions were associated with the personality domains of Openness to Experience and Agreeableness as predicted by results from previous studies (McCrae, 1996; McCrae & Costa, 1997; Streyffeler & McNally, 1998). Those young adults who reported having a mature faith orientation (FMS-T), particularly one that was expressed via prosocial acts and values towards others (FMS-H), and who resisted clear-cut pat answers when thinking about existential questions brought on by the experience of life (quest) were more likely to be curious about their inner and outer world and to have experientially richer lives, willing to entertain unconventional values and novel ideas. Those young adults who reported “using” (extrinsic) as well as “living” (intrinsic) their religion, and those who reported incorporating their faith into life commitments, priorities, and actions (FMS-T) as it relates to transcendent reality (FMS-V) as well as to others (FMS-H) were more likely to be altruistic, sympathetic towards and trusting of others, and eager to help them. These results suggest that certain religiosity dimensions are associated with more agreeable and tolerant, open-minded personalities in young adults.

Third, none of the religiosity dimensions assessed was associated with the personality domain of Neuroticism. As expected, the experience of negative affect was unrelated to self-

reported faith orientation (FMS-T) or religious motivation (I/E-R, and Quest) in this sample. The correlations of the religiosity dimensions with the Openness to Experience and Agreeableness domains, combined with these results from the Neuroticism domain, support the convergent and discriminant validity of the religiosity measures used in this study.

Additional Findings

There were some relationships, however, that were not in the hypothesized directions. For example, some of the religiosity dimensions were positively associated with the SCL-90-R items. More specifically, the extrinsic scale of the I/E-R and the quest scale were positively associated with sets of items from the SCL-90-R. These results imply that young adults who report a religious orientation used primarily for utilitarian reasons (extrinsic) are more likely to experience greater interpersonal alienation. Although these findings were unexpected and given the correlational nature of the data, issues of causality cannot be addressed, it is possible that efforts to engage in religious behavior that are primarily extrinsic, such as going to church to make friends or to meet others is a coping response to deal with distress experienced via interpersonal alienation. Seybold and Hill note that religion that is strictly extrinsic has been shown to be maladaptive (2001). This research provides a possible explanation for the positive association between young adults' self-reports of extrinsic religiosity and psychological distress in this study.

Additionally, those young adults who report an open-ended attitude toward questions arising from the contradictions and tragedies of life (religious quest) were also likely to report greater distress, specifically symptoms consistent with anxiety and depression. While this specific association was not hypothesized, there is research evidence that identifies a positive association between religious quest and psychological distress in general. Genia (1996) notes that those who obtain high scores on the Quest Scale may be more likely to experience greater psychological distress due to relinquishing the emotional comfort that typically comes from greater ideological certainty. This research provides a plausible explanation for the present findings that higher scores on the quest scale were positively associated with more self-reported symptoms of psychological distress.

Although the proxy measures derived from the religiosity measures consisted of items significantly associated with religiosity domains, the magnitude of the associations between the total scores of these measures and the original religiosity measures were modest, ranging from

$r=.25$ (faith maturity scale, quest) to $.27$ (extrinsic). Accordingly, the strength of these relationships was insufficient to conclude that these are true proxy measures of religiosity dimensions. While these items reflect correlates of the criterion measures, they are not prototypic of it. At least three factors can partially account for these low correlations. First, the nature of the item content of the SCL-90-R is, by definition, symptom focused. There are very few items that, from a face valid standpoint, share common variance with religiosity items. Second, given that the sample of young adults was a non-clinical sample, the endorsement frequencies of many of the SCL-90-R items were low, compared to what it might have been with a clinical, or distressed sample. With greater variability in responses, the possibility of stronger correlations would also be greater (Tabachnick & Fidel, 1996). Third, using mean substitution to address the problem of missing data from the religiosity measures, while a conservative strategy, resulted in a reduction in variance and a corresponding decrease in the magnitude of the correlations between the SCL-90-R items and the religiosity measures. As such, the factor-analytically derived measures should not be used as proxy measures of religiosity.

There is further evidence suggesting why these measures should not be used as proxy measures of religiosity. In this study, the factor-analytically derived measures failed to demonstrate appropriate convergent and discriminant validity. These measures did not share a similar relationship with the personality domains of Openness, Agreeableness, and Neuroticism as did the parent instruments. The derived measures were not significantly associated with Openness and although the measures derived from the intrinsic, quest, and faith maturity scales were significantly associated with Agreeableness, the measure derived from the extrinsic scale was not associated with this personality domain. Additionally, whereas the religiosity measures (quest, FMS-T, FMS-H) demonstrated a significant positive relationship with Openness to Experience, none of the derived measures had a significant association with this personality domain. Perhaps most intriguing, was the fact that all of the factor analytically derived measures were significantly associated with Neuroticism, even though the original religiosity measures were not associated with this domain. It is worth noting that the large effect size representing the correlation between the GSI and Neuroticism domain ($r = .49$) is similar in magnitude to the correlations between the derived measures and Neuroticism ($r = .38$ to $.52$). In retrospect, since the measures were derived from items that are collectively subsumed by the Global Severity Index of the SCL-90-R, and the Neuroticism domain and SCL-90-R share similar item content

(i.e. items assessing aspects of depression, anxiety, hostility) the magnitude of the correlations between the derived measures and Neuroticism are not surprising. The lack of convergent and discriminant validity for the derived measures of religiosity, however, again underscores the fact that these are not true proxy measures of religiosity dimensions.

Study Limitations

With these points in mind, there are a few limitations with this present study. First, there were more missing data from the religiosity measures than either the SCL-90-R and the NEO-PI-R. No standardized procedures existed for addressing the problem of missing data from the religiosity measures and although mean substitution was utilized, this is a conservative procedure, likely attenuating the correlations between items and scales from which the initial item pool was developed. Second, and already mentioned above, the population was relatively homogeneous with respect to psychological distress. A non-clinical sample of young adults completing a measure of psychological distress is likely to result in limited variability for individual items which, in turn, can also attenuate the resulting correlations of interest. From a scale development perspective, successive populations would need to be more heterogeneous with respect to clinical distress to avoid creating a measure that is sample specific. The properties of the proposed instruments may be quite different when used with another population (e.g. chronic pain patients, psychiatrically impaired individuals). Third, the SCL-90-R items had little in common from a face-valid standpoint with the religiosity measures and little variability in item responses. A religiosity proxy measure developed from an instrument that had items with content similar to those of the religiosity measures and items that elicited greater response variability might result in a proxy measure with stronger psychometric properties.

Conclusions

In sum, this study identified a group of items that were associated, both negatively and positively, with validated measures of religiosity. These religiosity measures were also associated with personality domains in predictable ways. There was insufficient evidence, however, to conclude that the proposed measures could serve as true proxy measures of religiosity as they were more strongly associated with negative affectivity than the religiosity measures from which they were derived. This study underscores how dimensions of religiosity are associated with both positive and negative indices of psychological health. Further work should be done to identify those dimensions of religiosity that are most relevant for predicting

physical and mental health and to identify the specific mechanisms through which these dimensions may operate.

Appendix

Table 1

Descriptive statistics for study measures

Measure	M	SD	T-Score	Obtained Range	Possible Range
SCL-90-R:					
SOM	0.65	0.63	50.75	0.00 – 2.92	0.00 – 4.00
OC	1.02	0.72	51.69	0.00 – 3.11	0.00 – 4.00
IS	0.85	0.71	48.11	0.00 – 3.13	0.00 – 4.00
DEP	0.85	0.73	50.72	0.00 – 3.23	0.00 – 4.00
ANX	0.57	0.60	48.55	0.00 – 2.70	0.00 – 4.00
HOS	0.63	0.67	46.91	0.00 – 3.50	0.00 – 4.00
PA	0.31	0.52	48.46	0.00 – 3.14	0.00 – 4.00
PI	0.72	0.73	47.40	0.00 – 3.50	0.00 – 4.00
PSY	0.51	0.64	48.03	0.00 – 3.00	0.00 – 4.00
GSI	0.70	0.57	48.89	0.01 – 2.88	0.00 – 4.00
RELIGIOSITY:					
Intrinsic	26.15	6.80	*	10.29 – 40.00	8.00 – 40.00
Extrinsic	15.99	4.14	*	6.00 – 26.00	6.00 – 30.00
Quest	4.82	1.51	*	1.00 – 9.00	1.00 – 9.00
FMS-V	4.24	1.27	*	1.50 – 7.00	1.00 – 7.00
FMS-H	3.74	0.97	*	1.58 – 7.00	1.00 – 7.00
FMS-Total	4.22	0.78	*	2.34 – 6.21	1.00 – 7.00
NEO-PI-R:					
Neuroticism	93.28	20.93	48.62	30.00 – 152.00	0.00 – 192.00
Extraversion	119.19	24.18	48.90	20.00 – 177.00	0.00 – 192.00
Openness	114.76	20.45	48.85	60.00 – 178.00	0.00 – 192.00
Agreeableness	111.07	19.18	48.54	44.00 – 169.00	0.00 – 192.00
Conscientiousness	104.69	20.19	45.35	48.00 – 169.00	0.00 – 192.00

Note. SOM=Somatization. OC=Obsessive-Compulsive. IS=Interpersonal Sensitivity. DEP=Depression. ANX=Anxiety. HOS=Hostility. PA=Phobic Anxiety. PI=Paranoid Ideation. PSY=Psychoticism. GSI=Global Severity Index. FMS-V=Faith Maturity Scale–Vertical Subscale. FMS-H=Faith Maturity Scale-Horizontal Subscale.

* T-Scores were not computed for these instruments because normative means and standard deviations were not available for all the measures of religiosity.

Table 2

Intercorrelations of religiosity measures with the SCL-90-R

Measure	Intrinsic	Extrinsic	Quest	FMS-T	FMS-H	FMS-V
Somatization	-.10	.01	.02	-.04	.18**	-.14*
Obsessive-Compulsive	-.14*	.11	.14*	-.07	.12	-.15*
Interpersonal Sensitivity	-.11	.01	.10	-.13	.01	-.15*
Depression	-.13	.02	.14*	-.10	.12	-.16*
Anxiety	-.13	.04	.04	-.05	.16*	-.16*
Hostility	-.16*	.02	.01	-.19**	-.06	-.21**
Phobic Anxiety	-.14*	.09	-.02	-.10	.02	-.13
Paranoid Ideation	-.18*	.02	.12	-.14*	.08	-.20**
Psychoticism	-.07	.09	.04	-.04	.11	-.10
Global Severity Index	-.14*	.06	.09	-.10	.12	-.18**

Note. FMS-T=Faith Maturity Scale-Total Score. FMS-H=Faith Maturity Scale-Horizontal Subscale. FMS-V=Faith Maturity Scale-Vertical Subscale.

Table shows Pearson Product Moment Correlations. * $p < .05$, ** $p < .01$.

Table 3

Summary of factor loadings for SCL-90-R items significantly correlated with intrinsic religiosity

SCL-90-R Item	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1: Fear/Anxiety				
15 – Thoughts of ending your life	.80	.06	.20	.13
25 – Feeling afraid to go out of your house alone	.75	.00	.10	.05
52 – Numbness or tingling in parts of your body	.52	.33	-.03	.37
59 – Thoughts of death or dying	.64	.09	.27	.32
75 – Feeling nervous when you are left alone	.64	.39	.25	-.13
Factor 2: Agitation/Resentment				
6 – Feeling critical of others	-.13	.57	.36	.16
38 – Having to do things very slowly to insure correctness	.19	.64	.02	.26
43 – Feeling that you are watched or talked about by others	.23	.45	.29	.31
76 – Others not giving you proper credit for your achievements	.17	.74	.25	.09
78 – Feeling so restless you couldn't sit still	.39	.45	.09	.34
81 – Shouting or throwing things	.48	.52	.12	-.07
Factor 3: Isolation/Depression				
29 – Feeling lonely	.12	.35	.63	.17
54 – Feeling hopeless about the future	.21	.24	.68	.24
70 – Feeling uneasy in crowds, such as shopping or at a movie	.12	-.03	.75	.04
88 – Never feeling close to another person	.25	.23	.66	.18
Factor 4: Thought Disturbance				
9 – Trouble remembering things	.12	-.07	.16	.76
32 – Feeling no interest in things	.24	.21	.39	.53
51 – Your mind going blank	.04	.41	.07	.70
68 – Having ideas or beliefs that others do not share	-.07	.36	.28	.54

Note. Loadings greater than or equal to .40 are in bold.

Table 4

Intercorrelations of intrinsic religiosity and the proposed intrinsic religiosity measure

Measure	Intrinsic	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	.20**				
Factor 2	.25***	.58***			
Factor 3	.18**	.54***	.62***		
Factor 4	.21**	.44***	.61***	.58***	
Total Score	.26***	.76***	.88***	.84***	.80***

Note. Table shows Pearson Product Moment Correlations. ** p<.01, *** p<.001.

Table 5

Summary of factor loadings for SCL-90-R items significantly correlated with extrinsic religiosity

SCL-90-R Item	Factor 1
Factor 1: Interpersonal Alienation	
8 – Feeling others are to blame for most of your troubles	.64
10 – Worried about sloppiness or carelessness	.42
47 – Feeling afraid to travel on buses, subways, or trains	.69
60 – Overeating	.51
62 – Having thoughts that are not your own	.73
85 – The idea that you should be punished for your sins	.71
89 – Feelings of guilt	.74

Note. Loadings greater than or equal to .40 are in bold.

Table 6

Summary of factor loadings for SCL-90-R items significantly correlated with the Quest Scale

SCL-90-R Item	Factor 1
Factor 1: Anxiety/Depression	
5 – Loss of sexual interest or pleasure	.41
6 – Feeling critical of others	.64
27 – Pains in lower back	.45
28 – Feeling blocked in getting things done	.68
29 – Feeling lonely	.70
31 – Worrying too much about things	.73
38 – Having to do things slowly to insure correctness	.64
45 – Having to check and double-check what you do	.73
46 – Difficulty making decisions	.73
55 – Trouble concentrating	.78
68 – Having ideas or beliefs that others do not share	.53
71 – Feeling everything is an effort	.76
88 – Never feeling close to another person	.67

Note. Loadings greater than or equal to .40 are in bold.

Table 7

Summary of factor loadings for SCL-90-R items significantly correlated with the Faith Maturity Scale-Total Score

SCL-90-R Item	Factor 1	Factor 2
Factor 1: Depression/Interpersonal Sensitivity		
6 – Feeling critical of others	.68	.02
11 – Feeling easily annoyed or irritated	.67	.01
21 – Feeling shy or uneasy with the opposite sex	.58	.31
29 – Feeling lonely	.82	.22
30 – Feeling blue	.79	.26
36 – Feeling others do not understand you or are unsympathetic	.66	.39
37 – Feeling that people are unfriendly or dislike you	.53	.47
Factor 2: Hopelessness/Hostility		
15 – Thoughts of ending your life	.18	.73
32 – Feeling no interest in things	.40	.52
52 – Numbness or tingling in parts of your body	.12	.65
59 – Thoughts of death or dying	.13	.74
67 – Having urges to break or smash things	.07	.75
81 – Shouting or throwing things	.20	.64

Note. Loadings greater than or equal to .40 are in bold.

Table 8

Intercorrelations of faith maturity and the proposed faith maturity measure

Measure	FMS-T	FMS-V	FMS-H	Factor 1	Factor 2
FMS-V	.93***				
FMS-H	.76***	.53***			
Factor 1	.22**	.24***	.02		
Factor 2	.22**	.27***	.00	.57***	
Total Score	.25***	.29***	.02	.93***	.83***

Note. FMS-T=Faith Maturity Scale-Total Score. FMS-H=Faith Maturity Scale-Horizontal Subscale. FMS-V=Faith Maturity Scale-Vertical Subscale.

Table shows Pearson Product Moment Correlations. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9

Coefficient alphas and average inter-item correlations for the factor-analytically derived measures

Proposed Measure	Number of Items	Coefficient Alpha	Range of Inter-Item Correlations	Average Inter-Item Correlations
Intrinsic: Factor 1	5	.80	.32-.54	.45
Intrinsic: Factor 2	6	.76	.22-.48	.35
Intrinsic: Factor 3	4	.77	.33-.56	.46
Intrinsic: Factor 4	4	.84	.35-.45	.40
Intrinsic: Total	19	.89	.06-.63	.31
Extrinsic	7	.74	.14-.56	.30
Quest	13	.89	.17-.59	.38
Faith Maturity Scale: Factor 1	7	.85	.20-.79	.44
Faith Maturity Scale: Factor 2	6	.80	.27-.61	.40
Faith Maturity Scale: Total	13	.87	.09-.79	.34

Table 10

Correlations between NEO-PI-R personality domains and study measures

Measure	Neuroticism	Openness	Agreeableness
Religiosity Measures:			
Intrinsic	-.02	.04	.33***
Extrinsic	-.00	-.09	.18*
Quest	.04	.30***	-.01
FMS-V	-.08	.08	.38***
FMS-H	.05	.36***	.31***
FMS-T	-.07	.19**	.43***
Derived Measures:			
Intrinsic	-.42***	-.06	.21**
Extrinsic	.38***	-.09	-.09
Quest	.52***	.13	-.17**
FMS-T	-.50***	-.03	.25***
SCL-90-R:			
GSI	.49***	.05	-.18**

Note. FMS-T=Faith Maturity Scale–Total Score. FMS-H=Faith Maturity Scale–Horizontal Subscale. FMS-V=Faith Maturity Scale–Vertical Subscale. GSI=Global Severity Index. Table shows Pearson Product Moment Correlations. * $p < .05$, ** $p < .01$, *** $p < .001$.

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10/94 – present Psi Chi Honor Society, Asbury College
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