

Religiosity and Mental Health: A Meta-Analysis of Recent Studies

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A meta-analysis was performed in an attempt to clarify the proposed relationship between religiosity and psychological adjustment. Specific focus was given to the issue of definition, namely, whether differences in researchers' conceptualizations of religiosity and mental health could account for the various contradictory findings by psychologists of religion. Analysis of 34 studies conducted during the past 12 years revealed that the definitions of religiosity and mental health utilized by psychologists in this field were indeed associated with different types and strengths of the correlations between religiosity and mental health. Discussion of results assesses the fit between relevant theory and the pattern of change in effect size across categories of religion and adjustment, and concludes with implications for therapeutic uses of religious involvement.

INTRODUCTION

Psychologists have long been interested in the role that religion plays in the interpretation of and response to life events and how this manifests itself in everyday psychological adjustment. Some (e.g., Ellis 1965) claim that religion represents institutionalized irrationality and is deleterious to psychological functioning. Other psychologists (e.g., Jung 1933; Allport 1950) see religion as a source of meaning and stability in an uncertain world and conducive to positive psychological health. With the debate thus framed, much research has gone into the question of whether religion is beneficial, detrimental, or neutral in regard to psychological adjustment.

Many studies have been performed examining this topic and the results have been varied. Some have found religion to be positively correlated with adjustment (e.g., Koenig and Larson 2001; Gartner, Larson, and Allen 1991), some have found it to be negatively correlated (e.g., Dreger 1952; Schaefer 1997), and some have found no significant relationship at all (e.g., Lewis et al. 1997). It is the purpose of this current study to address this discrepancy and attempt an explanation as to why such divergent results exist. It is the position taken by the authors that the contradictory findings obtained by researchers are due to their operationalizations of religiosity and of mental health. Religion is a multifaceted construct and it is possible that different aspects of religiosity are differentially related to mental health. Further analyses are performed examining the impact of various definitions of mental health. The possibility that religiosity and mental health definitions interact, producing a pattern in which different aspects of religiosity demonstrate different relationships with different definitions of psychological adjustment, is examined.

Religiosity and Mental Health: Past Reviews and Meta-Analyses

Several reviews have been published concerning the relationship between religiosity and mental health. Some have been general in nature, while others have focused on one specific

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type of religiosity. In one early meta-analysis, Bergin (1983) found an overall mean correlation of +0.09 between religiosity and “better mental health,” and concluded that there was moderate (and ambiguous) evidence for a positive relationship between religiosity and psychological functioning.

Donahue (1985) focused his review and meta-analysis on Gordon Allport’s (1950) conceptualization of intrinsic (religion as an end in itself) versus extrinsic (religion as a means to an end, such as social interaction) religious orientation. The review and meta-analysis demonstrated a number of findings, including a positive mean correlation between extrinsic orientation and two negative characteristics (“prejudice” and “fear of death”), and a lack of a relationship between intrinsic orientation and these same characteristics.

Bergin’s (1991) review of the empirical literature on the relationship between religiosity and mental health up through the late 1980s showed evidence that “average effects are generally positive, although not dramatic.” His review indicated a number of correlations between religious affiliation and positive psychological functioning.

Payne et al. (1991) reviewed a number of studies, a search revealing several ambiguous findings. Religiosity was positively related to a number of measures of psychological well-being. However, no overall evidence was found for a relationship between religiosity and the prevention of major clinical disorders. The authors concluded that the ambiguous findings are due to the multifaceted nature of religion, and that attempts to consider religiosity as an overall positive, negative, or neutral force in people’s lives is based on a mistaken conceptualization of religion as uniform in nature. It would be better, they claim, to examine *in what way* a person is religious rather than *how* religious he or she is.

Gartner, Larson, and Allen’s (1991) review of approximately 200 studies demonstrated a number of findings. First, a salutary relationship between religiosity and positive functioning was demonstrated in a number of areas. However, ambiguous overall results were found in the relationships between religion and anxiety, sexual disorders, psychosis, prejudice, self-esteem, and intelligence. Religion was also found to be associated with some other indicators of poor mental health. Similar to Payne et al. (1991), the authors conclude that the ambiguous findings among psychologists of religion may be due to religion’s multifaceted nature, and they call for greater specificity in how psychologists operationalize both religiosity and mental health.

Larson et al. (1992) assessed all measures of religious commitment reported in the *American Journal of Psychiatry* and *Archives of General Psychiatry* between 1978 and 1989, and examined the proportions of studies that reported positive, neutral, and negative relationships between religiosity and mental health. Of the 50 studies that reported relationships between religious commitment and mental health, 36 (72 percent) reported a positive relationship, eight (16 percent) reported a negative relationship, and six (12 percent) reported a neutral relationship between religious commitment and mental health. The authors concluded that religion is a multidimensional construct and called for “the accurate measurement of the relevant dimensions of religious commitment” in future research.

Seybold and Hill (2001) briefly reviewed the literature on the helpful and harmful effects of religion and found numerous “salutary effects” of religion on physical and mental health. Several possible mechanisms were proposed to account for this overall beneficial effect of religion on mental health, including social networks, healthier lifestyles, coping strategies, positive emotions, and stress appraisal.

Finally, Koenig and Larson (2001) systematically reviewed 850 studies and found several associations between religiosity and mental health. Of those studies that correlated religiosity with life satisfaction, 80 percent demonstrated a positive relationship between religious beliefs and practices and greater life satisfaction. Among those studies that correlated religiosity with depression, approximately two-thirds found lower rates of depression and/or anxiety among the more religious. The authors conclude that a generally positive relationship exists between religiosity and mental health, and include several suggestions for mental health practitioners in dealing with religious issues in therapy.

The major reviews of the literature presented here did not all arrive at consistent conclusions. Although most supported the idea of a generally positive relationship between religiosity and mental health, others reported more ambiguity in their findings. While some focused their reviews on differing definitions of religiosity, and some on differing definitions of mental health, few systematic comparisons were made of how different types of religiosity and different types of mental health may interact. Further research is therefore warranted in this area.

Definitions of Religiosity

As was confirmed by the majority of reviewers, religion is a multifaceted object, incorporating cognitive, emotional, motivational, and behavioral aspects. Although all these facets (some more than others) have been examined by various researchers, the issue of which facet most clearly represents the essential nature of religiosity has received little attention by many who attempt to use religiosity as a variable in their studies. Several possibilities exist. It could be that there is a central aspect to religion, the examination of which would provide the strongest and most accurate results when issues such as the interaction of religion and mental health are discussed. If so, researchers would be well advised to concentrate their efforts on that aspect of religiosity when conducting research. Another possibility is that each aspect of religiosity could represent its own unique, but interrelated, construct, with the overall concept of religiosity consisting of a cluster of somewhat independent factors. If that is the case, then it would be expected that some aspects of religiosity would correlate with other variables (such as mental health) more strongly than others, and some might even demonstrate negative correlations while others demonstrate positive correlations.

Definitions of Psychological Adjustment

A second major issue addressed in this meta-analysis is the choice of mental health variables. Just as there is more than one definition of religiosity, researchers have operationalized everyday mental health in a number of ways. Some studies have focused on negative measures of psychological adjustment (depression, anxiety, guilt, negative mood, etc.), with the understanding that a negative correlation between religiosity and these variables represents a beneficial functioning of religion (e.g., Braam et al. 1997; Maltby and Day 2000). Others have looked at mental health as a matter of happiness or life satisfaction (e.g., Bergan and McConatha 2000; Myers and Diener 1995), while still others have looked at more existential/humanistic conceptualizations such as self-actualization or purpose in life (e.g., Ryan, Rigby, and King 1993; French and Joseph 1999).

As these are very different conceptualizations of what it means to be a well-adjusted human being, it is to be expected that the choice of one of these conceptualizations of mental health to use in one's study might result in a different demonstrated relationship than if one had chosen to use another measure of adjustment. On top of that, the issue of interactions must be addressed. It is not enough to say that different forms of religiosity may be differentially related to mental health, or that different forms of mental health may be differentially related to religiosity; the question must be raised as to whether some forms of religiosity affect some forms of mental health more strongly than other combinations of conceptualizations.

METHODS

Literature Search

Database

Searches were made of the PsycINFO, Social Sciences Abstracts, MEDLINE, and Humanities Abstracts online databases using the search terms "religiosity and mental health," "religion and

mental health,” “religiousness and mental health,” “religiosity and depression,” “religiosity and happiness,” “religiosity and life satisfaction,” and “religiosity and self esteem.”

Literature

In addition to the database keyword searches, searches were also made of the major journals of the empirical study of the psychology of religion (*Journal for the Scientific Study of Religion*, *Journal of Psychology and Theology*, *Review of Religious Research*). Searches were also made of the reference sections of every article found to pertain to the topic at hand.

Inclusion Criteria

Recency

Only studies published between 1990 and July 2001 were included in the sample. This was taken to be a representative sample of the studies done in this field. The period also was chosen so that comparisons could conveniently be made with previous reviews and meta-analyses, most of which were done in the mid-1980s to early 1990s (Ellison 1998). If the results of this meta-analysis warrant it, a more comprehensive meta-analysis could be performed.

Statistics

In accordance with Lipsey and Wilson’s (2001) prescription that the effect size statistic used in a meta-analysis “must remain the same across studies,” it was determined that by far the most common effect size statistic used was the Pearson product-moment correlation. Therefore, studies that reported their findings using this statistic formed the majority of the data file. Studies that reported their findings using a statistic amenable to conversion to r (e.g., the ANOVA F -ratio, regression β s, t -tests) were also included if the authors provided enough information to perform the conversions.

Religiosity

Only studies that utilized the concept of religiosity were included. Constructs such as spirituality, mysticism, religious coping, religious attribution, God-mediated locus of control, moral reasoning, and transcendent experiences, although related constructs, are conceptually different from religiosity as an individual difference variable, which Hill and Hood (1999:5) broadly define as “phenomena that include some relevance to traditional institutionalized searches to acknowledge and maintain some relationship with the transcendent.”

Mental Health

The focus of this meta-analysis is the relationship between religiosity and everyday psychological adjustment. Studies that focused on major clinical disorders (such as schizophrenia) and studies that focused on aspects of psychological life that are connected to mental health but are not themselves “mental health variables” (such as coping, attribution, or physical robustness) were not included.

Sample

When the selection process was complete, 35 studies were included in the meta-analysis (see Table 1). Many of these studies included multiple measures of religiosity and of psychological adjustment, so the final data set consisted of 264 correlations.

TABLE 1
FINAL LIST OF STUDIES INCLUDED IN THE META-ANALYSIS

Study	# of Effect Sizes	Range of Effect Sizes	Religiosity Codes*	Mental Health Codes**
Anson, Antonovsky, & Sagy (1990)	1	-0.06	1	2
Bergan & McConatha (2000)	2	0.06-0.19	1, 3	2
Bienenfeld et al. (1997)	3	-0.40-0.30	3	1, 2
Blaine & Crocker (1995)	20	-0.27-0.33	2	1, 2
Braam et al. (1997)	2	-0.01-0.09	1	1, 2
Coke (1992)	4	-0.08-0.42	1, 3	2
Dorahy et al. (1998)	8	-0.09-0.27	2	2
Ellison & Gay (1990)	3	0.12-0.18	1, 3	2
Ellison (1991)	6	0.09-0.19	1, 3	2
Forst & Healy (1990)	1	0.17	2	2
Francis, Jones, & Wilcox (2000)	3	0.08-0.20	2	2
French & Joseph (1999)	4	0.21-0.41	2	2, 3
Fry (2000)	3	0.29-0.34	1, 3	2
Genia & Shaw (1991)	2	0.20-0.24	1, 3	1
Genia (1996)	10	-0.05-0.19	1, 2, 3	1, 2
Hong & Giannakopoulos (1994)	2	0.06-0.13	3	1, 2
Hovemyr (1996)	2	-0.24--0.10	1, 3	2
Koenig (1995)	1	0.24	3	1
Levin & Taylor (1998)	24	-0.03-0.21	1, 3	2
Lewis, Joseph, & Noble (1996)	2	0.00-0.05	1, 2	2
Lewis et al. (1997)	4	-0.09-0.12	2	1, 2
Luyten, Corveleyen, & Fontaine (1998)	20	-0.21-0.07	1, 2	1
Maltby, Lewis, & Day (1999)	15	-0.27-0.38	1, 3	1, 2
Maltby & Day (2000)	30	-0.34-0.33	1, 3	1, 2
Mookherjee (1994)	5	0.08-0.24	1, 3	2
Nelson (1990)	6	-0.04-0.38	1, 3	1, 2
Peacock & Poloma (1999)	32	-0.03-0.37	1, 2, 3	1, 2, 3
Poloma & Pendleton (1990)	8	0.00-0.31	1, 3	2
Plante & Boccaccini (1997)	4	0.13-0.21	3	1, 2
Pressman et al. (1990)	3	0.52-0.62	1, 3	1
Rasmussen & Charman (1995)	2	0.16-0.54	2	2, 3
Ryan, Rigby, & King (1993)	26	-0.60-0.43	1, 3	1, 2, 3
Schwab & Peterson (1990)	2	0.18-0.22	3	1
Williams et al. (1991)	3	0.09-0.17	1	1
Wright, Frost, & Wisecarver (1993)	1	0.19	3	1

*1: institutional religion, 2: ideology, 3: personal devotion.

**1: low psychological distress, 2: high life satisfaction, 3: high self-actualization.

Data Analysis

A number of statistical computer software packets exist, but few include meta-analytic procedures as a part of their standard "toolkit." A search was made for software that would be both useful and relatively easy to use. The best packet found was a macro written for SPSS/Win Version 6.1 by David Wilson, available for download at his website (<http://www.wam.umd.edu/~wilsondb/home.html>). Analyses of the data were performed using Wilson's SPSS macro "metaf.sps." The

“metaf” macro analyzes meta-analytic data using an ANOVA-analog (Hedges 1982; Lipsey and Wilson 2001). Effect sizes from studies, transformed according to Fisher’s Z-transform procedure (Hedges and Olkin 1985) and weighted by their inverse variance weights (Lipsey and Wilson 2001), were the dependent variables in this ANOVA analog: the definitions of religiosity and mental health utilized by the researchers were the independent variables.

Coding

The independent variables were coded according to common (or closely related) operationalizations of the variables of interest. A representative sample of studies (17 studies containing 76 effect sizes) was given to a colleague for independent coding to determine interrater reliability. The colleague was informed of the general nature of the study, given a brief description of the six categories used, and asked to code the effect sizes reported in the studies. Reliability, determined by percentage of agreement (Lipsey and Wilson 2001), was high (93.44 percent). To address the impact of rater discrepancies, the statistical procedures described below were rerun using the colleague’s coding set. The discrepant codes did not significantly alter the meta-analysis results. The discrepancies were therefore disregarded, and the authors’ coding set was used.

A number of divisions and groupings of dimensions of religiosity have been posited, including Allport’s (1950) intrinsic-extrinsic religious orientation and the later addition of the controversial quest orientation (see Donahue 1985), the Fetzer Institute/National Institute on Aging’s (1999) identification of 10 dimensions of the combined construct of religiosity and spirituality (religious-spiritual history, preference-affiliation, social participation, private practices, coping styles, beliefs and values, commitment, experiences, sense of support, and relational motivation), Ryan, Rigby, and King’s (1993) concept of introjected-identified internalization of religious values, and the four factors proposed by Jacobson, Heaton, and Dennis (1990) (belief orthodoxy, ritual involvement, personal religious behavior, and moral consequentiality). The following classification scheme was developed taking into account the major issues considered by each of these categorizations and the essential constructs they are intended to represent.

Definitions of religiosity that focused on the social and behavioral aspects of religion (e.g., attendance at religious services, participation in church activities, extrinsic religious orientation, participation in ritual prayer) were coded as a single variable—“institutional religion.” Definitions of religiosity that focused on the beliefs involved in religious activity (e.g., ideology, attitudes, belief salience, fundamentalism) were coded as “ideological religion.” Definitions of religiosity that focused on personal, internalized devotion (e.g., intrinsic religious orientation, emotional attachment to God, devotional intensity, colloquial prayer) were coded as “personal devotion.” Due to the ambiguous and problematic nature of measures of quest orientation (see Donahue 1985), quest measures were not included in this meta-analysis.

Researchers who study the relationship between religiosity and mental health have developed as wide a range of conceptualizations of what it means to be a successfully functioning psychological being as they have of what it means to be a person of faith. Gartner, Larson, and Allen (1991) reviewed a number of categories, reporting differential relationships between religiosity and mental health depending on which aspect of psychological health one examined. Well-being, anxiety, and self-actualization (among others, see the Introduction for a more in-depth review) seemed to demonstrate different patterns of correlation with religious commitment. Payne et al. (1991) made a special point to differentiate between “mental health” (the presence of positive traits) and “mental illness” (the presence of negative traits), and their review revealed different relationships between religiosity and psychological adjustment for each of these constructs. Spilka and Werme (1971) also differentiated between various relationships between religion and mental health, including religion functioning as a haven from stress, a source of social acceptance,

and as a means of “growth and fulfillment.” These categorizations of psychological functioning were taken into account when coding studies according to which type of mental health they measured. Definitions of psychological adjustment that focused on unhappy aspects of mental health (depression, anxiety, and so on) as a negative indicator of mental adjustment were coded as a single variable—“psychological distress.” Definitions of psychological adjustment that focused on positive feelings regarding the self and one’s life in general (self-esteem, happiness, and so on) were coded as a single variable—“life satisfaction.” Definitions of psychological adjustment that focused on more growth-oriented and humanistic aspects of mental health (identity integration, existential well-being, and so on) were coded as a single variable—“self-actualization.”

Multiple Effect Sizes

Most of the studies included in the data set provide more than one effect size, with the largest one producing 32 effect sizes. This has the potential of biasing the results, as it is a violation of the assumption of independence (effect sizes from the same study are not generated independently of each other). Erel and Burman (1995) developed the following procedure for testing this possibility: the correlation between the number of effect sizes reported per study and the mean effect size per study was calculated. If significant, this would indicate that the multiple effect sizes is a source of systematic bias. The Pearson correlation coefficient calculated was not significant ($r = -0.23$, $p = 0.19$), indicating that multiple effect sizes from studies did not appear to bias the data toward greater or lesser effect magnitude. No adjustments were necessary, therefore, to correct for this type of bias.

RESULTS

First, an overall relationship was examined by standardizing all correlations (Fisher’s Z -transform procedure) and calculating the mean correlation across all studies. A significant positive relationship between religiosity and mental health was found ($r = 0.10$, $p < 0.0001$) when combining all effect sizes and ignoring definitional or categorical variations in type of religiosity and type of mental health. Thus, although numerous ($n = 78$) negative relationships were found in the data set of 264 effect sizes, they represent the exception to the rule. Although many of these negative effect sizes were near zero and/or nonsignificant, they are an important component of the significant heterogeneity statistic ($Q = 2142.30$; $p < 0.0001$), which indicates systematic, reliable sources of variation in the magnitude, and possibly the sign, of religiosity/mental health relationships.

Our next analysis tested the idea that variation in definition or type of religiosity is one systematic source of variation in effect sizes. A one-way ANOVA analog (Hedges 1982; Lipsey and Wilson 2001) was performed, in which effect sizes were combined within each type of religiosity, and then compared across types. There was significant between-group heterogeneity ($Q_B = 210.02$; $p < 0.0001$), indicating a relationship between definition of religiosity and magnitude of effect size. As indicated by nonoverlapping confidence intervals, the religiosity main effect took the form of significant increases in mean effect size as one proceeds from institutional religiosity to ideology to personal devotion (see far-right column, Table 2).

Within-group heterogeneity was considerable ($Q_W = 1932.30$; $p < 0.0001$), so further possible sources of variability were investigated. The same procedure was performed testing the idea that variations in definition of mental health is also a source of systematic variation. There was significant between-group heterogeneity ($Q_B = 326.46$; $p < 0.0001$), indicating a relationship between definition of mental health and magnitude of effect size. As indicated by nonoverlapping confidence intervals, the main effect took the form of significant increases in mean effect size as one proceeds from definitions centered around low psychological distress to life satisfaction to

TABLE 2
ANOVA ANALOG RESULTS (MEAN EFFECT SIZES, 95 PERCENT CONFIDENCE INTERVALS, AND NUMBER OF EFFECT SIZES) FOR ALL DEFINITIONS OF RELIGIOSITY AND MENTAL HEALTH

Definition of Religiosity	Definition of Mental Health			Overall Effect Sizes
	(Low) ^a Psychological Distress	(High) Life Satisfaction	(High) Self-Actualization	
Institutional religion	−0.03* CI: −0.05 to −0.02 (46 effect sizes)	0.10** CI: 0.08 to 0.11 (61)	0.07* CI: 0.03 to 0.12 (8)	0.06** CI: 0.05 to 0.07 (118)
Ideological religion	−0.01 CI: −0.04 to 0.03 (18)	0.12** CI: 0.10 to 0.14 (31)	0.28** CI: 0.21 to 0.34 (4)	0.08** CI: 0.06 to 0.10 (50)
Personal devotion	0.11** CI: 0.09 to 0.13 (35)	0.14** CI: 0.13 to 0.16 (50)	0.32** CI: 0.29 to 0.35 (11)	0.15** CI: 0.14 to 0.16 (96)
Overall effect sizes	0.02** CI: 0.01 to 0.03 (99)	0.12** CI: 0.11 to 0.13 (142)	0.24** CI: 0.21 to 0.26 (23)	0.10** CI: 0.10 to 0.11 (264)

Note: Significance determined using modified Bonferroni procedure.

* $p < 0.001$; ** $p < 0.0001$.

^a Scores on measures of distress were reverse-coded, such that high scores represent low distress. Thus, positive effect sizes in this column indicate that more religiosity is associated with less distress.

self-actualization (see bottom row, Table 2). Significant heterogeneity remained ($Q_W = 1815.84$; $p < 0.0001$), indicating further unidentified sources of variability.

Given the remaining heterogeneity present, further exploration was warranted, focusing on the issue of interactions between definitions of religiosity and definitions of mental health. The main effect of steadily increasing effect sizes across definitions of mental health does not hold equally well within different definitions of religiosity. The main effect pattern serves as a good description only for ideological religion, in which mean effect sizes increase steadily from −0.01 to 0.12–0.28 across definitions of mental health. In contrast, mean effect sizes actually decrease as one proceeds from life satisfaction to self-actualization types of mental health when religiosity is defined according to institutional participation (Row 1, Table 2). When religiosity is defined as personal devotion, a very slight increase in mean effect size from lack of distress to life satisfaction types of mental health is followed by a very large increase as one proceeds to self-actualization measures—again, the steadily increasing main effect pattern does not apply. Although statistics are not yet developed for assessing the significance level of the present interaction, it is plausible that some of the significant within-category variability described in the above main effect analog analysis is attributable to the fact that type of religiosity interacts with type of mental health to determine the magnitude and direction of the relationship between them.

We conclude the section by noting that this interaction cannot account for all systematic variation unexplained by the initial main effects analysis because there was still within-group heterogeneity of effect sizes even in the nine particular combinations of religiosity and mental health categories (eight of the nine combinations demonstrated significant heterogeneity, with Q_W ranging from 19.88 to 533.93 and all with $p < 0.0005$). A possible source of the remaining within-combination heterogeneity is discussed below.

DISCUSSION

To begin with, an overall relationship was found between religiosity and mental health across all conditions ($r = 0.10$). This indicates that regardless of any considerations of religiosity or mental health definitions, religiosity may be said to have a salutary relationship with psychological adjustment. This finding is consistent with prior reviews and with the meta-analysis conducted by Bergin (1983), who found a mean correlation of 0.09 between religiosity and mental health.

Observing the mean effects sizes within each combination of religiosity and mental health definitions, a number of interesting patterns emerge. First, there is support for each position that has been taken within the religiosity-mental health debate. Depending on which definitions of religiosity and psychological adjustment one used, evidence could be found supporting a positive relationship between religiosity and mental health (consistent with studies such as Koenig and Larson 2001), supporting a negative relationship (consistent with studies such as Schafer 1997), and supporting the position that there is no relationship (consistent with studies such as Lewis et al. 1997). This finding could partially explain the multiplicity of confusing and contradictory findings within this field of inquiry. Second, an overall pattern can be seen in which using institutional religiosity as the defining characteristic produces the weakest (and the only negative) correlations across the board, with ideology producing stronger effects, and personal devotion producing the correlations of greatest magnitude.

Two theories closely connected to the issue of religiosity and mental health are terror management (Greenberg et al. 1991) and self-determination (Deci and Ryan 1985). Central to terror management theory is the idea that adherence to a shared cultural worldview (including a religion) provides a “buffer” that shields the individual from existential anxiety and enables the individual to achieve self-esteem and (presumably) life satisfaction through the knowledge that one is a valuable member of a meaningful universe. One could predict from this that participation in religion (the institutional manifestation of a shared worldview) would therefore be associated with improved psychological adjustment, with the strongest relationship being an inverse correlation between religiosity and anxiety-related measures of mental health. However, the opposite pattern is demonstrated, with psychological disturbance measures demonstrating the weakest set of effect sizes and a negative correlation between institutional participation and lowered anxiety/depression scores.

One explanation for this seemingly contradictory result is that merely being in proximity to believers and participating in their activities is not enough to empower the process of terror management. It may be necessary to be a “true believer,” accepting and internalizing the worldview as one’s own, for the worldview’s capacity to generate meaning and worth to function. In other words, the “shared cultural worldview” may need to be internally, even privately, “shared” by the adherent to be existentially relevant. This would fit the demonstrated pattern within the data, with measures of personal devotion producing the strongest correlations with positive psychological functioning. Perhaps measures of religiosity that focus on institutional participation are focusing on the least existentially relevant aspects of religion, with personal devotion producing the greatest existential satisfaction, and ideology in between the two. By focusing on aspects of religiosity that are increasingly central to the process of terror management, stronger relationships are detected. Terror management theory, therefore, would predict the strong relationship between devotion and self-actualization, since self-actualization as a definition of mental health most directly involves existential and humanistic well-being. However, it does not explain the weaker relationships demonstrated by anxiety/disturbance measures, which have face validity as the most direct assessments of terror management.

Self-determination theory fares better as an explanatory framework. This theory is based on the idea that the process of internalizing values is organized in a one-dimensional simplex, with external motivation (behavior performed for tangible contingencies) comprising the least internal form of internalization, followed by introjected motivation (behavior performed as a result of ego

involvement and threats to self-esteem), internalized motivation (behavior performed for the sake of personally relevant values), and, as the most internal form, intrinsic (behavior performed for its own sake). Ryan, Rigby, and King's (1993) work provides examples of religious internalization. They focus on two types of religious internalization, introjected (the individual's involvement in religion is based on "affective and self-esteem contingencies") and identified (the individual's involvement in religion is based on "personally chosen and valued" beliefs).

Ryan, Rigby, and King (1993) present evidence supporting the idea that "variations in the style of internalizing or adopting beliefs or practices can have significant impact on domain-relevant behavior, attitudes, and psychological well-being." Nix et al. (1999), utilizing vitality as their measure of mental health, found a positive causal relationship between self-determination and vitality, indicating that greater internality of motivation influences a measure of subjective well-being. Deci and Ryan (1985) also reported a positive correlation between autonomy orientation (a conceptualization of internal motivation) and self-esteem, and an undermining effect of introjected motivation on self-esteem. Taken together, these data indicate that greater internality of motivational style is associated with more positive mental health outcomes. Consistent with this approach, we found that the religiosity/mental health correlation becomes stronger as both concepts (religiosity and mental health) are operationalized in an internal, identified manner.

Our results also have practical implications, given the recent rise in emphasis on therapeutic use of religiosity (Ellison 1998; Seybold and Hill 2001). With this increase in many psychotherapists' desire to integrate spirituality and/or religion into their clients' therapy, an understanding of which aspects of religiosity are most conducive to psychological health could be a very useful thing. For a detailed and practical examination of the issues surrounding the therapeutic use of religion and therapy with religiously involved persons, the reader is directed to Shafranske's (1996) *Religion and the Clinical Practice of Psychology*. One possible strategy would be for therapists and pastoral counselors to guide clients toward an increased participation in those aspects of their spiritual lives that are most psychologically beneficial, while cautioning them about those aspects found to be less beneficial (or detrimental). The pattern described in our research suggests that regardless of the clinical target (reduction of anxiety, daily adjustment, or long-term growth), clinicians would achieve the greatest results by concentrating on personal devotion/relationship-with-God aspects of religiosity.

At this point, three important limitations of the database become salient. First is the issue of causality. Despite the framing of the issue by researchers as the "effect" of religion on mental health (e.g., Bergan and McConatha 2000; Levin, Chatters, and Taylor 1995), all the studies contained within this meta-analysis are correlational in nature. This leaves open the possibility that good mental health predisposes people to religious involvement and commitment, rather than vice versa. Causal patterns need to be established empirically, via appropriate longitudinal or, ideally, random assignment designs. Research along these lines into the impact of meditation exercises on positive mental states has generated both positive (Emavardhana and Tori 1997) and negative (Shapiro 1992) consequences. It is possible that religious involvement also has more complicated influences than suggested by our correlational results. Until causal pathways and boundary conditions are more fully understood, clinicians should be especially sensitive to indications that an emphasis on religious activities is ineffective or counterproductive.

Second, significant within-class heterogeneity of effect sizes remains even after a nine-fold classification into distinct combinations of religiosity and mental health definitions. Sources of this heterogeneity are very important to clinical practice because they indicate the presence and activity of external variables influencing the relationship between the individual's religiosity and psychological adjustment. It is important to understand what these variables are, and if and how they can be manipulated so as to maximize the benefit for the individual.

One important source of heterogeneity is likely to be race. Jacobson, Heaton, and Dennis (1990), for example, focus on differences in the experiential aspects of religion as demonstrated in white and African-American Christian churches in America. African-American churches, the

authors contend, involve a greater degree of “other-worldliness,” emotional intensity, and personal involvement in worship services. This, they claim, also explains differences in black-white religiosity and the differential functioning of religion in the lives of white and African-American Christians. “Despite apparently similar theologies,” they state, “the actual religion experienced by whites and blacks may differ.” These differences are considered to be connected to the experience of religion among slaves, who used their worship services to create tightly-knit communities and to provide the emotional support necessary to endure the hardships of slavery.

Supplementary analysis of all the effect sizes in Table 2, both negative and positive, were larger for African-American participants than for white participants. The relevance of racial differences to clinical use of religion as a therapeutic aid needs to be clarified by a new set of studies, in which the same measures and definitions of religiosity and mental health are applied to random samples of various races, taking care to control for variables that are often confounded with race (e.g., nationality, socioeconomic status, region of residence, and physical health). This work will provide a good foundation for exploring the role of individual differences in religion/mental health relationships.

A third limitation of the study has to do with the classifications themselves. As each conceptualization of religiosity and mental health was defined, each construct included a set of supposedly unique characteristics. A possible explanation for the correlations found in the meta-analysis is semantic and conceptual overlap. This weakness may be demonstrated by the example of the constructs “personal devotion” and “self-actualization.” Personal devotion as a category of religiosity contains within it ideas such as commitment to a worldview and the utilization of that worldview as the individual’s source of meaning and value, ideas that are also central to most existential and humanistic definitions of positive psychological functioning. This overlap could be one explanation for the strong relationship found between personal devotion and self-actualization. Another overlap involves the correlations between types of religiosity, an issue that could not be addressed in this meta-analysis. While the three categories of religiosity possess unique characteristics, a significant relationship between them is expected. An individual who is high in personal devotion, for example, would be expected to also participate in institutional rituals and hold to the ideals of the religion. Furthermore, different samples may contain different patterns of correlations among category memberships, contributing to between-category and within-category heterogeneity of variance.

A final difficulty involves the fact that these classification schemes, while based on previous research and established categorizations, are partly arbitrary. By conceptualizing religiosity and mental health into different categories (e.g., social vs. individual participation, instead of institutional vs. personal devotion categories), a different pattern of results would necessarily follow. However, this sensitivity of results to category schemes illustrates the main point of this work, which is that careful definition will help to clarify ambiguities resulting from sweeping generalizations.

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