

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/286158415>

# Integrating spirituality into a behavioral model of depression

Article in *Journal of Cognitive and Behavioral Psychotherapies* · September 2013

CITATIONS

7

READS

258

6 authors, including:



**Peryl Agishtein**

Institute for Applied Research and Community Collaboration

3 PUBLICATIONS 29 CITATIONS

SEE PROFILE



**Ariel Kor**

Interdisciplinary Center Herzliya

11 PUBLICATIONS 131 CITATIONS

SEE PROFILE



**Jonathan Kanter**

University of Washington Seattle

123 PUBLICATIONS 3,216 CITATIONS

SEE PROFILE



**David Rosmarin**

Harvard Medical School

69 PUBLICATIONS 1,043 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Mental Health, Spirituality and Religiosity: Towards integration and development of religious/spiritual Competencies for Mental Health Professionals. [View project](#)

---

## INTEGRATING SPIRITUALITY INTO A BEHAVIORAL MODEL OF DEPRESSION

---

*Peryl AGISHTEIN<sup>1\*</sup>, Steven PIRUTINSKY<sup>2</sup>, Ariel KOR<sup>3</sup>,  
David BARUCH<sup>4</sup>, Jonathan KANTER<sup>4</sup>, David H. ROSMARIN<sup>5</sup>*

---

<sup>1</sup>City University of New York, New York, USA

<sup>2</sup>Columbia University, New York, USA

<sup>3</sup>Interdisciplinary Centre, Hertzelia, Israel

<sup>4</sup>University of Wisconsin, Milwaukee, USA

<sup>5</sup>McLean Hospital/Harvard Medical School, Boston, USA

---

### Abstract

A protective association between spirituality and depression is well-established, but the processes driving this association, as well as its clinical implications, remain unclear. We postulate that one mechanism driving this relationship is frequency of spiritual behaviors, and propose framing this process in the context of value-driven behavioral activation (BA). To clarify the extent to which spiritual behaviors function in a value-driven BA framework, we examined whether intrinsic religiosity (value of religion) moderates the effect of spiritual behaviors on depression in a cross-sectional community sample. Results of a hierarchical linear regression indicate that for those with high intrinsic religiosity, greater engagement in spiritual behaviors was related to decreased depressive symptomatology, while for those low on intrinsic religiosity, greater spiritual behaviors was associated with higher depression. For those individuals at mean levels of intrinsic religiosity, spiritual behavior appeared to have little relationship with depression. Results of a logistic regression demonstrated that intrinsically-motivated spiritual behaviors predict clinical depression as well as depressive symptomatology. The clinical implications of these findings are discussed, including the utility of integrating spirituality into the value-driven behavioral treatment of depression.

**Keywords:** spiritual, religion, behavioral activation, depression

According to several national studies (e.g., Gallup, 2011), spirituality – which can be defined broadly as any way of relating to that which is regarded as

---

\* Correspondence concerning this article should be addressed to:  
drosmarin@mclean.harvard.edu

sacred (Pargament & Sweeney, 2011) – is widespread in the United States: a full 81% of Americans state that this life domain is at least “fairly important,” and 55% state that it is “very important.” Given the sheer prevalence of spiritual belief, it is surprising that psychological research on spirituality and religion has historically been sparse. Research on the intersection of spirituality and psychological variables has increased substantially over the past three decades, but the relevance of spirituality to clinical practice and therapeutic outcomes remains largely unexplored (Rosmarin, Pargament, & Robb, 2010).

A large body of empirical evidence confirms that spirituality can act as a buffer against psychopathology, particularly depression (e.g., Berry & York, 2011; Johnson et al., 2011; Murphy et al., 2000; Pargament, Koenig, & Perez, 2000; Smith, McCullough, & Poll, 2003). However, despite the potential richness of spirituality as a therapeutic tool, few papers have explored theoretical links between greater spirituality and decreased depression, and this area remains opaque to many clinicians. We propose that the role of spirituality in affective symptoms can be conceptualized via the behavioral model of depression.

The behavioral model of depression originally emphasized the function of reduced positive reinforcement in depression (Lewinsohn, 1974). According to this early model, when positive reinforcers are lost, the behaviors maintained by them extinguish and the individual experiences less pleasure and increased depressed mood. To address this cycle, Behavioral Activation (BA) – a simple yet remarkably effective clinical intervention – was created to help depressed individuals schedule and engage in healthy, non-depressive and pleasant activities (MacPhillamy & Lewinsohn, 1974; Kanter et al., 2010). Engaging in positive activities indeed helps to reverse the depressive cycle by increasing the frequency of behaviors that lead to positive reinforcement, thereby increasing positive mood and pleasure, which in turn generates additional non-depressive reinforcing behavior.

However, while the behavioral model of depression theoretically encompasses *any* type of rewarding activity, recent behavioral models have sought to improve on the original paradigm by incorporating the patient’s personal *values* into the conceptualization of symptoms. In accordance with this trend, a modern rendition of BA, dubbed Value-Driven BA, encourages patients to engage in “value-driven” (not simply pleasant) activities (Kanter et al., 2010; Lejuez, Hopko, & Hopko, 2001; Lejuez, Hopko, Acierno, Daughters, & Pagoto, 2011). These developments have supported and extended the basic theory of behavioral activation by postulating that if generally elevated activity levels can disrupt the depressive behavioral cycle, engaging in activities *that are subjectively valued by the patient* will be even more effective in disrupting the depressive behavioral cycle, as such behaviors can be intrinsically reinforcing. The scheduled activities in Value-Driven BA are thus directly tied to the patient’s values, which include what they rate as important in a range of life domains, such

as relationships, education, career, recreation, volunteer work, physical /health issues, psychological issues, and spirituality (Lejuez et al., 2001; 2011).

It is known that spirituality can profoundly influence human value systems in two ways: (1) it may dictate the content of one's value system (e.g., Hall, Matz, & Wood, 2010; Schwartz & Huisman, 1995), and (2) it may be an intrinsic source of meaning. However, despite the prevalence of spirituality and its richness as a source of values, this domain has been under-utilized thus far in value-driven behavioral psychotherapy. In a meta-analysis of 147 papers on spirituality/ religiousness and depression, the effect of spiritual involvement and religious behavior on depression was relatively small (Smith, McCullough, & Poll, 2003), suggesting the presence of some moderating variables (which has, indeed, been confirmed by numerous studies; e.g., Pirutinsky et al., 2011a). We postulate that, in accordance with the model of Value-Driven BA, a likely moderator of the association between spirituality and depression is the value that the individual places on his/her spiritual involvement and behavior. The theory of Value-Driven BA implies that behaviors that are most reinforcing for an individual are most likely to decrease his or her depression; extrapolating from this, we propose that the degree to which individuals experience their spiritual behavior as rewarding and positively reinforcing will moderate the relationship between spiritual behaviors and depression. Thus, individuals who engage in spiritual behaviors *that they value highly* will be more likely to exhibit lower levels of depression than individuals who engage in spiritual behaviors that are less valued. Restated, the extent to which spiritual involvement is associated with lower levels of depression may depend on one's level of intrinsic religiosity.

There is limited empirical support for this theory: several studies have shown that high intrinsic religiosity (i.e., internally-motivated religion) is indeed associated with lower levels of depression (Payman & Ryburn, 2010; Lesniak, Rudman, Rector, & Elkin, 2006; Smith, et al., 2003). However, interactions between intrinsic religiosity and spiritual behavior have yet to be explored. Of course, the buffering effect of spirituality on depression may be moderated or mediated by other factors as well. Researchers have specifically pinpointed social support (Dew et al., 2010; Carleton, Esparza, Thaxter, & Grant, 2008; Pirutinsky et al., 2011a) and physical activity (Powell, Shahabi, & Thoresen, 2003; Lee & Newberg, 2005; Merrill & Thygeson, 2001) as two variables that may partially account for this effect: increased religious involvement often co-occurs with increased social support and physical activity, and evidence confirms that these two factors are often a mediator/moderator of the effect. Therefore, the current study controlled for these confounding factors.

In sum, spirituality has been previously shown to buffer against depression, but the path through which this process occurs is not well understood. One possibility is that spiritual behaviors serve as a source of value-driven behavioral reinforcement. To provide some initial research on this subject, we sought to examine whether intrinsic religiosity (a measure of the subjective value

and positively reinforcing nature of spiritual activities) moderates the effect of spiritual behaviors on depressive symptoms within a community sample. We hypothesized that spiritual behaviors would interact with intrinsic religiosity in predicting depression, such that among those high in intrinsic religiosity, increased spiritual behaviors would be associated with decreased depressive symptoms, whereas among those low in intrinsic religiosity, spiritual behaviors would be unrelated to depression. We further sought to examine whether these relationships would remain over and above the potentially confounding influence of social support and physical activity. Thus, our additional hypothesis was that the relationship between spiritual activities, depression, and intrinsic religiosity would remain significant above these previously identified mediators.

## **Methods**

### *Design and Procedure*

This study was a cross-sectional Internet-based survey. Participants were invited to complete a number of questionnaires as part of a larger investigation on spirituality and mental health in the Jewish community. Participants accessed the survey, which took about an hour to complete, on their own computers.

### *Participants*

Participants were recruited to participate on a volunteer basis in an Internet-based questionnaire study. This study was conducted as part of a larger investigation on the relevance of spirituality/religion to mental health in the Jewish community. As such, the sample was collected primarily via Jewish sources utilizing multiple means, including: solicitation of Jewish community organizations to distribute information about the study; posting of e-mail and electronic flyers to Jewish community e-mail lists, internet bulletin boards, and social media outlets; and advertisements on Jewish websites. In addition, participants were encouraged to assist in recruitment by telling others about the study.

### *Measures*

*Depression.* Depressive symptoms were assessed using a short form of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). This scale contains 10 items and has been validated extensively as a measure of depressive symptoms (e.g., Andresen, Malmgren, Carter, & Patrick, 1994). Scores range from 0 to 30, and scores of 10 or above indicate clinically significant levels of depression (Andresen et al., 1994). Internal consistency in the current sample was high ( $\alpha = .89$ ).

*Spiritual Behaviors.* We measured participants' levels of spiritual activity using a modified version of the Duke Religion Index (2 items assessing for frequency of private and public prayer), as well as 3 single items hypothesized to

be of particular cultural and spiritual significance to the predominantly Jewish sample (assessing for frequency of spiritual study and making blessings over food as well as Sabbath observance). The total 5-item measure was subjected to a principle-components factor analysis, which revealed a single factor solution that accounted for 68% of the variance. All five items had loadings of .7 or above on this single factor, which represents frequency of spiritual behaviors. In addition, internal consistency for the resulting scale was high ( $\alpha = .87$ ). Thus, all items were summed to calculate a total score representing each participant's level of spiritual behavior, such that higher scores on the instrument indicated higher levels of involvement.

*Intrinsic Religiosity.* Intrinsic religiosity measures the value that an individual places on their religion by assessing whether one's religion is intrinsically, innately valued or is utilized as an avenue towards extrinsic gain (Allport and Ross, 1967). Intrinsic religiosity was measured in the current study using the three-item intrinsic religiosity subscale from the Duke Religion Index (Koenig, Meador, & Parkerson, 1997). These items read "My religious beliefs are what really lie behind my whole approach to life," "In my life, I experience the presence of the Divine (i.e., God)," and "I try hard to carry my religion over in to all other dealings in life." These were rated on a five-point scale ranging from "Definitely not true" to "Definitely true." This scale has demonstrated adequate internal consistency ( $\alpha = .78$ ), test-retest reliability ( $ICC = .91$ ), and correlation with similar measures (Storch, Strawser, and Storch, 2004). Internal reliability in the current sample was high ( $\alpha = .87$ ).

*Physical Activity.* Physical activity was assessed via two items previously used in the national Behavioral Risk Factor Surveillance System survey (Centers for Disease Control and Prevention [CDC], 2009). Two measures of physical activity and behaviors were assessed: amount of moderate physical activity, and amount of vigorous physical activity. Participants were asked to specify the number of minutes per week that they usually engage in "moderate physical activities" (the examples given were "such as brisk walking, bicycling, vacuuming, gardening, or anything else that causes some increase in breathing or heart rate") and the number of minutes per week that they usually engage in "vigorous physical activities" (with samples given "such as running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate"). These self-report items have been used in numerous studies analyzing the BRFSS survey data; they are reliable and valid (Evenson & McGinn, 2005; Nelson, Holtzman, Bolen, Stanwyck, & Mack, 2001), and have been shown to predict daily physical activity logs as well as accelerometer scores (Yore et al., 2007).

*Social Support.* Perceived social support was examined using a single item previously used in the national Behavioral Risk Factor Surveillance System survey (CDC, 2009) which asked participants: "How often do you get the social and emotional support you need? Please include support from any source." This

item was scored on a five-point scale consisting of “Never,” “Rarely,” “Sometimes,” “Usually,” and “Always.” It has been used in numerous studies and has been supported as reliable and valid (e.g., Nelson et al., 2001; Pirutinsky et al., 2011a).

#### *Analytic Strategy*

To test our hypothesis that intrinsic religiosity would moderate the effect of spiritual behaviors on depressive symptoms within a community sample, we conducted a multiple regression analysis as described by Aiken and West (1991). This regression included the main effects of both intrinsic religiosity and spiritual behaviors (Model 1), and a multiplicative interaction term that assessed if the effect of spiritual behaviors varied by the level of intrinsic religiosity (Model 2). We further sought to examine whether these relationships would remain over and above the potentially confounding influence of social support and physical activity. Thus, Model 3 added the potential confounding variables of moderate and vigorous physical activity and social support. Finally, to assess the relevance of this Value-Driven BA model to clinical depression, we conducted a similar logistic regression analysis using clinically depressed versus non-depressed as the outcome variable.

## **Results**

#### *Participants*

A total of 212 participants completed the internet-based survey. The majority of the sample ( $n = 212$ ) was female ( $n = 157$ ; 74.1%) and participants ranged in age from 19 to 79 years ( $m = 41.7$ ,  $SD = 15.1$ ). 92.9% of the sample self-identified as White; the remaining 7.1% identified as Asian-American (.5%), Latino (.5%), Multi-racial (.9%), or other (5.2%). Religious affiliation in the sample was 98.1% Jewish and 1.9% Christian; of Jewish affiliated participants, 58% identified as Orthodox and 42% did not. Most of the sample resided in the U.S. (82.5%), with smaller proportions from Canada (6.6%) and other countries (7.9%). The majority of participants had attained at least a college diploma (83.5%), while 44.8% had attained a Master’s degree or above. In terms of socioeconomic status, 14.2% had an annual income under \$25,000, 19.3% had an income between \$25,000 and \$50,000, 17% had an income between \$50,000 and \$75,000, 12.3% had an income between \$75,000 and \$100,000, 14.2% had an income between \$100,000 and \$130,000, and 20.8% had an income over \$130,000.

#### *Preliminary Results.*

Descriptive statistics for the variables of interest are reported in Table 1. Most means were comparable to means represented in previous research. Intrinsic religiosity ( $M = 12.36$ ,  $SD = 2.94$ , range 3–15) was moderately higher than means

**Table 1.** Descriptive statistics for variables of interest.

Measure	Mean	Standard	
		Deviation	Range
Depression: CES-D	8.40	6.52	0-29
Intrinsic Religiosity: Duke Religion Index	12.36	2.94	3-15
Spiritual Behaviors	25.77	7.96	5-37
Social Support: BRFSS	2.41	0.92	1-5
Moderate Physical Activity (hours per week): BRFSS	2.06	3.95	0-35
Vigorous Physical Activity (hours per week): BRFSS	1.45	2.06	0-12

reported in previous samples (e.g.,  $M = 9.66$ , Storch et al., 2004a;  $M = 9.80$ , Peltzer, 2011) but comparable to means obtained in similar Orthodox Jewish populations ( $M = 12.30$ , Pirutinsky et al., 2011a). Depressive symptoms ( $M = 8.40$ ,  $SD = 6.52$ , range 0–29) and rates of clinical depression (27%) in the sample were slightly higher than those reported in the general population (e.g., CES-D depressive symptoms  $M = 7.94$ , Grzywacz et al., 2010). Zero-order correlations between variables indicated that spiritual behaviors ( $M = 25.77$ ,  $SD = 7.96$ , range 5–37) and intrinsic religiosity were positively correlated ( $r(212) = .73$ ,  $p < .001$ ), and that both spiritual behaviors and intrinsic religiosity negatively correlated with depression ( $r(212) = -.14$ ,  $p < .05$ ;  $r(212) = -.24$ ,  $p < .001$  respectively).

#### Regression Analyses.

Hierarchical multiple regression (Aiken & West, 1991) and logistic regression were utilized to examine our two hypotheses: (1) Spiritual behaviors would interact with intrinsic religiosity in predicting depression, such that among those high in intrinsic religiosity, increased spiritual behaviors would be related to decreased depression, whereas among those low in intrinsic religiosity, spiritual behaviors would be unrelated to depression. (2) This pattern would remain significant above previously identified confounding predictors of social support and physical activity.

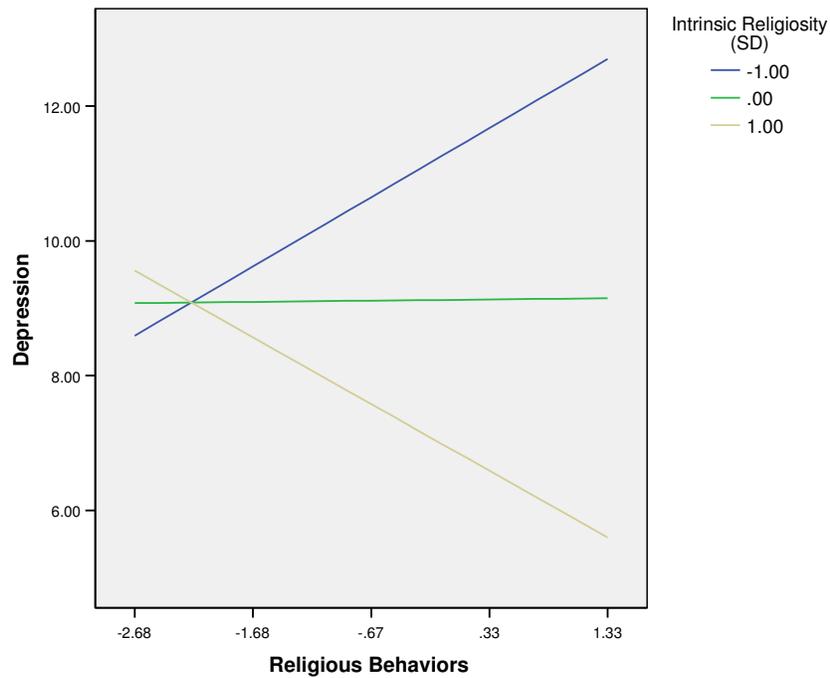
The hierarchical multiple regression incorporated three models. Model 1 included mean-centered intrinsic religiosity and spiritual behaviors, Model 2 added the multiplicative interaction of intrinsic religiosity and spiritual behaviors, and Model 3 added the potential confounding variables of moderate and vigorous physical activity and social support. Results of these analyses are presented in Table 2 and indicate that intrinsic religiosity had a significant main effect such that those reporting higher intrinsic religiosity reported lower depressive symptoms (Model 1). Spiritual behaviors were not significant. In regard to Hypothesis 1, the addition of the spiritual behaviors by intrinsic religiosity interaction significantly increased the variance explained (Table 2, Model 2). A plot of this interaction suggested that spiritual behaviors had an opposing effect dependent on the level of an individual's intrinsic religiosity (Figure 1).

**Table 2.** Intrinsic religiosity moderates the effect of religious behavior on depression.

	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>
Religious Behavior	.48	.63	.07	.26	.62	.04	-.004	.57	-.001
Intrinsic Religiosity	-1.92	.64	-.29**	-2.95	.72	-.45***	-2.26	.67	-.34**
RB X IR				-1.17	.41	-.26**	-1.01	.37	-.23**
Social support							-2.91	.43	.41***
Moderate activity							.24	.37	.04
Vigorous activity							-.83	.38	-.14*
$\Delta R^2$			.06			.04			.17
<i>F</i> for $\Delta R^2$			6.66**			8.29**			16.17***

Note: All variables were centered at their mean.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure 1.** Moderating effect of intrinsic religiosity.

Specifically, for this plot intrinsic religiosity was defined as high if scores were above 1 standard deviation (SD) above the sample mean and low if scores were below 1 SD below the mean. For those high on intrinsic religiosity, increased spiritual behavior was related to decreased depression, while for those low on intrinsic religiosity, increased spiritual behavior was associated with higher depression. For those individuals at mean levels of intrinsic religiosity, spiritual behavior appeared to have little relationship with depression.

In regards to Hypothesis 2, Model 3 added the potential confounding variables of social support and general physical activities (Table 2). Results indicated that social support and vigorous physical activity predicted significantly lower depressive symptoms, while moderate physical activity was not significant. Consistent with Hypothesis 2, both intrinsic religiosity and the interaction of spiritual behaviors with intrinsic religiosity remained significant controlling for these variables.

We also tested whether results differed based on religious affiliation, gender, or age. Due to the small number of Christian participants (1.9% of the sample), we were only able to compare Orthodox and non-Orthodox Jewish participants. Additional regression models testing whether the regression results differ between Orthodox and non-Orthodox participants ( $\Delta R^2 = .04$ ,  $F = 1.62$ ,  $p = .13$ ), between males and females ( $\Delta R^2 = .20$ ,  $F = .81$ ,  $p = .58$ ), and by age ( $\Delta R^2 = .001$ ,  $F = .06$ ,  $p = .81$ ) were not significant. Thus, within our sample, engagement in spiritual behaviors was significantly correlated with depression above social support and physical activity. However, this effect depended on the degree to which spiritual behaviors were idiographically valued such that among those high in intrinsic religiosity, greater spiritual behavior predicted lower depressive symptoms, while among those low in intrinsic religiosity, greater spiritual behavior predicted higher depression.

To further assess the relevance of spiritual behaviors to depression, we conducted an additional logistic regression analysis testing if spiritual behaviors interact with intrinsic religiosity and significantly differentiate clinically depressed from non-depressed participants, while controlling for identified confounding predictors of social support and physical activity. Clinical depression was defined as a score of 10 or above on the CES-D depression measure (Andresen et al., 1994). 32% of participants ( $n = 67$ ) met this criteria for clinically significant depression. Results of this analysis indicated that the overall model adequately fit the data and provided significantly better model fit than a baseline intercept-only model (Table 3). Inspection of individual coefficients indicated that intrinsic religiosity and spiritual behaviors alone (main effects) did not significantly predict likelihood of clinical depression. However, the interaction between intrinsic religiosity and spiritual behaviors was significant, such that individuals high on both intrinsic religiosity and spiritual behaviors were significantly less likely to report clinical levels of depression. A test of a model including this interaction term versus a model containing only main effects and

**Table 3.** Summary of logistic regression analysis for clinical depression.

	<b>B</b>	<b>SE B</b>	<b>Odds ratio (e<sup>B</sup>)</b>
Religious Behavior	-.19	.25	.83
Intrinsic Religiosity	-.49	.31	.61
RB X IR	-.38*	.19	.68
Social support	1.40**	.23	4.05
Moderate activity	.26	.21	1.30
Vigorous activity	-.32	.20	.73
$\Delta\chi^2$ ( $df = 6$ )		61.55**	
$\chi^2$ ( $df = 205$ )		187.25	

Note:  $e^B$  = exponentiated  $B$ .  $\Delta\chi^2$  = improvement in fit versus an intercept only model.  $\chi^2$  = overall fit for final model. \*  $p < .05$ , \*\*  $p < .001$ .

covariates was also significant ( $\chi^2(1) = 4.60, p = .03$ ). These results suggest that engagement in intrinsically motivated spiritual behaviors is correlated with decreased probability of clinical depression.

### Discussion and conclusions

We proposed a theoretical framework for understanding the relationship between spirituality and lower depressive symptomatology, and provided empirical evidence to support our framework. Specifically, we investigated whether frequency of spiritually-based behaviors would be associated with depressive symptoms, and whether any observed effects would be moderated by subjective value of spirituality (intrinsic religiosity). Results confirmed our hypothesis: for those high on intrinsic religiosity, high spiritual activity predicted lower depression. This effect remained significant while controlling for the variables of social support and physical activity. This indicates that spiritual behaviors have a specific negative association with depression over and above other potential reinforcing aspects of religious involvement. Interestingly, results did not differ based on religious affiliation (Orthodox Jewish versus non-Orthodox Jewish) or gender, suggesting again that intrinsic value of religion is a key moderator of the relationship between spiritual activity and depression.

Clinically, our findings have broad ramifications for the behavioral treatment of depression. First, if spiritual activity is meaningful to particular patients, engaging in spiritual behaviors as part of a behavioral activation protocol can be an appealing method of treatment for a patient, and should be discussed as an option. This may facilitate expanded dissemination of behavioral treatments by offering a value-driven, evidence-based treatment that is widely applicable

(spirituality is important to 81% of Americans; Gallup, 2011). Further, spiritual practice is highly varied (e.g., prayer, gratitude exercises, social interaction in a spiritual context, volunteerism, blessings over food) and thus offers myriad new opportunities to facilitate behavioral activation for patients who are so inclined. Despite its potential as a source of behavioral activation, very few BA protocols explicitly incorporate spiritual behavior (Rosmarin et al., 2010). It should be noted that a recent treatment study of BA with religious behaviors incorporated in a primarily Christian sample suggested that activation of religious behaviors effectively lowers depression (Armento, McNulty, & Hopko, 2012). These promising results indicate the need for further research on the interface between spirituality and behavioral approaches.

It is also notable that for those individuals low on intrinsic religiosity, greater spiritual behavior predicted *higher* depression, regardless of religious affiliation, gender, level of social support, and level of physical activity. This unexpected finding may be accounted for by a variety of factors. Spending a great deal of time performing activities that are personally meaningless can exacerbate stress, which is robustly associated with depression (e.g., Wang et al., 2012; Flynn & Rudolph, 2011; Hankin, Abramson, Miller, & Haefel, 2004). In addition, it is possible that those who engage in spiritual behavior despite low intrinsic religiosity are experiencing spiritual struggles (e.g., excessive fear of God, anger at God, fear of punishment or estrangement from a community), which have been found to predict concurrent and future depression (Pirutinsky, Rosmarin, Pargament, & Midlarsky, 2011). One clinical application of this finding is that therapists must be careful to clarify patients' value of spirituality prior to utilizing spiritual activity in the context of treatment. Further, it is important to assess for patients' spiritual struggles and conceptualize its function in terms of depressive and other symptoms as well.

The current research was limited by a self-selected sample of predominantly Jewish individuals (with the majority identifying themselves as Orthodox Jews). This reduces the cross-cultural generalizability of our study, suggesting the importance of future replication in different religious samples. Interestingly, our sample differed from other religious populations in one important characteristic: level of intrinsic religiosity, as measured by the Duke Religious Index, was higher in our sample than scores on the same measure in several other studies. The mean level of intrinsic religiosity in our sample was 12.4; in previous non-clinical samples of primarily Christian populations, the mean IR score ranged from 8.9 to 9.8 (Storch et al., 2004a; Peltzer, 2011; Lee, Miller, & Chang, 2006). Notably, the mean IR of our sample was remarkably similar to the mean IR in other predominantly Orthodox Jewish populations (e.g., mean IR = 12.3; Pirutinsky et al., 2011a). Despite the possible discrepancies in IR across religious populations, since IR alone did not predict lower depression, the direction of the interactive effect of IR and spiritual behaviors on depression should theoretically be consistent across populations.

The instruments utilized contributed to another limitation in that the use of self-report measures raises the possibility of social desirability response bias. However, this risk was greatly minimized by the anonymous online administration of measures. In addition, spiritual behaviors in this study were assessed using a new measure of Jewish spiritual behaviors that hasn't been previously validated. This was used because there are no measures of spiritual behaviors adapted for use in an Orthodox Jewish population. The internal reliability of the measure was found to be high, at  $\alpha = 0.87$ , and a factor analysis of the items suggested that they were measuring a single factor, but nonetheless the lack of previous validation is a limitation. Also, the measure used to assess social support in this study was a single-item measure rather than a multiple-item measure, thus increasing the potential risk of error.

Finally, the correlational and cross-sectional nature of the study restricts our ability to attribute causality. While our model predicts that engaging in spiritual activities leads to fewer depressive symptoms, the opposite may be true: depressed individuals may be less likely to engage in spiritual activities. The classic behavioral model of depression supports both contingencies: reduced activity is both a cause and an effect of depression (Ferster, 1973; Kanter et al., 2010). In our sample, however, greater spiritual activation was associated with fewer depressive symptoms only in individuals high in intrinsic religiosity; in fact, for individuals low in intrinsic religiosity, greater spiritual activity was associated with *higher* rates of depressive symptomatology. Since our data is correlational, based on the above findings we cannot rule out the possibility that depression may lead to lower intrinsic religiosity and greater religious behavior. However, overall, our pattern of findings is most consistent with a value-based behavioral model of depression. Longitudinal and experimental investigations would help to clarify the causal pathways between our variables.

Our findings highlight the relationship between religious values, spiritual behavior, and affect within the context of a behavioral model, and support our model of spirituality leading to lower depression via greater spiritual activation in highly spiritual individuals. Results thus lay the groundwork for the integration of spirituality into the behavioral model of depression. More broadly, they speak to the importance of developing spiritually-integrated BA for use with patients who value spiritual practice. Given the prevalence of religion in the general population and the paucity of theoretically-driven research in this area, further study of this model using longitudinal and experimental designs is warranted.

## REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allport, G.W., & Ross, J.M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5, 432-443.
- Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine*, 10, 77-84.
- Armento, M. E. A., McNulty, J. K., & Hopko, D.R. (2012). Behavioral activation of religious behaviors (BARB): Randomized trial with depressed college students. *Psychology of Religion and Spirituality*, 4, 206-222.
- Berry, D. M., & York, K. (2011). Depression and religiosity and/or spirituality in college: A longitudinal survey of students in the USA. *Nursing and Health Sciences*, 13, 76-83.
- Carleton, R. A., Esparza, P., Thaxter, P. J., & Grant, K. E. (2008). Stress, religious coping resources, and depressive symptoms in an urban adolescent sample. *Journal for the Scientific Study of Religion*, 47, 113-121.
- Centers for Disease Control and Prevention (CDC) (2009). *Behavioral Risk Factor Surveillance System Survey Questionnaire*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Dew, R. E., Daniel, S. S., Goldston, D. B., McCall, W. V., Kuchibhatla, M., Schleifer, C., Triplett, M. F., & Koenig, H. G. (2010). A prospective study of religion/spirituality and depressive symptoms among adolescent psychiatric patients. *Journal of Affective Disorders*, 120, 149-157.
- Evenson, K. R., & McGinn, A.P. (2005). Test-retest reliability of adult surveillance measures for physical activity and inactivity. *American Journal of Preventive Medicine*, 28, 470-478.
- Ferster, C. (1973). A functional analysis of depression. *American Psychologist*, 28, 857-870.
- Flynn, M., & Rudolph, K. D. (2011). Stress generation and adolescent depression: Contribution of interpersonal stress responses. *Journal of Abnormal Child Psychology*, 39, 1187-1198.
- Gallup Poll. (2011). *Religion*. Retrieved April 25<sup>th</sup> 2012 from <http://www.gallup.com/poll/1690/religion.aspx#1>.
- Grzywacz, J. G., Alterman, T., Muntaner, C., Shen, R., Li, J., Gabbard, S., Nakamoto, J., & Carroll, D.J. (2010). Mental health research with Latino farmworkers: A systematic evaluation of the Short CES-D. *Journal of Immigrant Minority Health*, 12, 652-658.
- Hall, D. L., Matz, D. C., & Wood, W. (2010). Why don't we practice what we preach? A meta-analytic review of religious racism. *Personality and Social Psychology Review*, 14, 126-139.
- Hankin, B. L., Abramson, L. Y., Miller, N., & Haefel, G. J. (2004). Cognitive vulnerability-stress theories of depression: Examining affective specificity in the prediction of depression versus anxiety in three prospective studies. *Cognitive Therapy and Research*, 28, 309-345.

### Articles Section

---

- Johnson, K. S., Tulskey, J. A., Hays, J. C., Arnold, R. M., Olsen, M. K., Lindquist, J. H., & Steinhauser, K. E. (2011). Which domains of spirituality are associated with anxiety and depression in patients with advanced illness? *Journal of General Internal Medicine*, *26*, 751-758.
- Kanter, J. W., Manos, R. C., Bowe, W. M., Baruch, D. E., Busch, A. M., & Rusch, L. C. (2010). What is behavioral activation? A review of the empirical literature. *Clinical Psychology Review*, *30*, 608-620.
- Koenig, H. G., Meador, K. G., & Parkerson, G. (1997). Religion Index for psychiatric research: A 5-item measure for use in health outcomes studies. *American Journal of Psychiatry*, *154*, 855-856.
- Lee, J., Miller, L., & Chang, E. S. (2006). Religious identity among Christian Korean-American adolescents. *Psychological Reports*, *98*, 43-56.
- Lee, B. Y., & Newberg, A. B. (2005). Religion and health: A review and critical analysis. *Zygon*, *40*, 443-468.
- Lejuez, C. W., Hopko, D. R., & Hopko, S. D. (2001). A brief behavioral activation treatment for depression: Treatment manual. *Behavior Modification*, *25*, 255-286.
- Lejuez, C. W., Hopko, D. R., Acierno, R., Daughters, S. B., & Pagoto, S. L. (2011). Ten year revision of the brief behavioral activation treatment for depression: Revised treatment manual. *Behavior Modification*, *35*, 111-161.
- Lesniak, K. T., Rudman, W., Rector, M. B., & Elkin, T. D. (2006). Psychological distress, stressful life events, and religiosity in younger African American adults. *Mental Health, Religion and Culture*, *9*, 15-28.
- Lewinsohn, P. (1974). A behavioral approach to depression. In R. J. Friedman, & M. M. Katz (Eds.), *Psychology of depression: Contemporary theory and research* (pp. 157-185). Oxford, England: John Wiley and Sons.
- MacPhillamy, D. J. & Lewinsohn, P. M. (1974). Depression as a function of levels of desired and obtained pleasure. *Journal of Abnormal Psychology*, *83*, 651-657.
- Merrill, R. M., & Thygeson, A. L. (2001). Religious preference, church activity, and physical exercise. *Preventive Medicine*, *33*, 38-45.
- Murphy, P., Ciarrocchi, J., Piedmont, R., Cheston, S., Peyrot, M., & Fitchett, G. (2000). The relation of religious belief and practices, depression, and hopelessness in persons with clinical depression. *Journal of Consulting and Clinical Psychology*, *68*, 1102-1106.
- Nelson, D. E., Holtzman, D., Bolen, J., Stanwyck, C. A., & Mack, K. A. (2001). Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Social and Preventive Medicine*, *46*, suppl. 1, S03-S42.
- Pargament, K. I., Koenig, H. G., & Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology*, *56*, 519-543.
- Pargament, K. I., & Sweeney, P. J. (2011). Building spiritual fitness in the Army: An innovative approach to a vital aspect of human development. *American Psychologist*, *66*, 58-64.
- Payman, V., & Ryburn, B. (2010). Religiousness and recovery from inpatient geriatric depression: Findings from the PEJAMA Study. *Australian and New Zealand Journal of Psychiatry*, *44*, 560-567.

- Peltzer, K. (2011). Spirituality and religion in antiretroviral therapy (ART) in Kwazulu-natal, South Africa: A longitudinal study. *Journal of Psychology in Africa, 21*, 361-370.
- Pirutinsky, S., Rosmarin, D. H., Holt, C. L., Feldman, R. H., Caplan, L. S., Midlarsky, E., & Pargament, K. I. (2011a). Does social support mediate the moderating effect of intrinsic religiosity on the relationship between physical health and depressive symptoms among Jews? *Journal of Behavioral Medicine, 34*, 489-496.
- Pirutinsky, S., Rosmarin, D. H., Pargament, K. I., & Midlarsky, E. (2011b). Does negative religious coping accompany, precede, or follow depression among Orthodox Jews? *Journal of Affective Disorders, 132*, 401-405.
- Powell, L. H., Shahabi, L., & Thoresen, C. E. (2003). Religion and spirituality: Linkages to physical health. *American Psychologist, 58*, 36-52.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.
- Rose, E. M., Westefeld, J. S., & Ansely, T. N. (2001). Spiritual issues in counseling: Clients' beliefs and preferences. *Journal of Counseling Psychology, 48*, 61-71.
- Rosmarin, D. H., Pargament, K. I., & Robb, H. B., III. (2010). Spiritual and religious issues in behavior change: Introduction. *Cognitive and Behavioral Practice, 17*, 343-347.
- Schwartz, S. H., & Huismans, S. (1995). Value priorities and religiosity in four Western religions. *Social Psychology Quarterly, 58*, 88-107.
- Smith, T. B., McCullough, M. E., & Poll, J. (2003). Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin, 129*, 614-636.
- Storch, E. A., Roberti, J. W., Heidgerken, A. D., Storch, J. B., Lewin, A. B., Killiany, E. M., Baumeister, A.L., Bravata, E.A., & Geffken, G.R. (2004a). The Duke Religion Index: A psychometric investigation. *Pastoral Psychology, 53*, 175-181.
- Storch, E. A., Strawser, M. S., & Storch, J. B. (2004b). Two-week test-retest reliability of the Duke Religion Index. *Psychological Reports, 94*, 993-994.
- Wang, J. L., Smailes, E., Sareen, J., Schmitz, N., Fick, G., & Patten, S. (2012). Three job-related stress models and depression: A population-based study. *Social Psychiatry and Psychiatric Epidemiology, 47*, 185-193.
- Yore, M. M., Ham, S. A., Ainsworth, B. E., Kruger, J., Reis, J. P., Kohl, H. W., & Macera, C.A. (2007). Reliability and validity of the instruments used in BRFSS to assess physical activity. *Medicine & Science in Sports & Exercise, 39*, 1267-1274.