Religiosity and Depression at Midlife: A Prospective Study

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Background: Previously, authors found that a high personal importance of religion and spirituality (R/S) at year 10 was predictive of a 75% decreased risk of recurrence of major depression in a prospective study of adults (*mean age at year 20 follow-up* = 37.1 years, *SD* = 6.2 years). Here, the authors follow-up with the original study sample 5/10 years later (*mean age at year 25/30 follow-up* = 47.5 years, *SD* = 6.9 years) to examine the association between R/S and major depression in midlife. **Method:** Participants were 79 of 114 original adult offspring of depressed and non-depressed parents. Diagnosis was assessed with the Schedule for Affective Disorders and Schizophrenia-Lifetime Version. Three measures of R/S were included: personal importance of R/S, frequency of attendance at religious services, and denomination. Using logistic regression analysis, the three R/S variables were used as longitudinal predictors and the outcome was diagnosis of MDD. **Results:** Reported high personal importance of R/S at year 20 was associated at year 25/30 with risk for an initial onset of depression. When stratified by familial risk for depression, frequency of attendance at year 20 was associated with recurrence of depression at year 25/30 in the group at high familial risk for depression. **Limitations:** Limitations include generalizability and differential rates of frequent attendance between participants retained and those who dropped out. **Conclusions:** Findings suggest that the relation between R/S and depression may vary across adult development. The preponderance of midlife depression in spiritually-oriented individuals aligns with challenges of midlife.

KEYWORDS: *Depression, Religiosity, Spirituality, Midlife, Affective Disorders, Major Depressive Disorder*

1. Introduction

In the past two decades, burgeoning inquiries into the association between religiosity and spirituality (R/S) and mental health have provided evidence for the salutary effect of R/S on physical and mental health (Koenig, King, & Carson, 2012). Although conflicting reports do exist (Maselko and Buka, 2008; Pargament et al., 2004), a substantial body of literature supports an inverse association between R/S and depression that remains consistent across myriad cross-sectional and longitudinal studies (for reviews, see Bonelli et al., 2012; Koenig, 2012a; Sharma et al., 2017). Reviews and meta-analyses of the literature examining this relation suggest that the majority of prospective cohort studies associated R/S with lower levels of or faster remission from depression, with an average effect size of the protective benefit of R/S against depression of $-.10$ (Koenig, 2012a; Smith et al., 2003). Although relatively small, Koenig (2012a) compares the benefit to the size of the risk conferred by gender on depressive symptoms. Attempts to disentangle the salutogenic and depressogenic mechanisms of R/S have been largely aimed at cognitive and behavioral mechanism such as beliefs (positive or negative) or coping strategies that either aid in or deter from navigating ecological challenges.

Previously in this sample, the association between R/S and depression was assessed cross-sectionally (*mean age at assessment of MDD = 26*, Miller et al., 1997) and prospectively between years 10 and 20 (*mean age at assessment of MDD = 37*, Miller et al., 2012) of this ongoing 30-year study of families at high and low risk for depression (Weissman et al., 2016a). In both reports on religion and spirituality (R/S), importance of R/S offered protective benefits against Major Depressive Disorder (MDD), putting those

with self-reported high importance of R/S at one-tenth and one-fourth the risk for MDD in late adolescence and early adulthood, respectively. From a lifespan perspective, it has been argued that the association between R/S and depression is potentiated during vulnerable developmental periods (i.e. adolescence and older adulthood) (Miller, 2013; Phillips, 2009), thus making re-examination of these associations at midlife a compelling addition to the literature.

Recent epidemiological assessments suggest that midlife confers the highest rate of lifetime prevalence of MDD, with women and those who were widowed/separated/divorced at increased risk (Hasin et al., 2005). Lifetime prevalence rates of MDD during this stage of life range from 16% to 22% (Hasin et al., 2005; Kessler et al., 2010). Risk factors for depression in midlife include poor quality of relationships, smoking, low self-esteem, functional impairment due to disability or illness, and lifetime and/or family history of depression (Bakhshaie et al., 2015; Barkow et al., 2003; Crowell et al., 2014; Orth et al., 2016.; Teo et al., 2013; Zeiss et al., 1996). The shift into midlife often brings with it changes in the family dynamic including children leaving the home, children returning home, dissolution of marriages and conflicting demands on time including work and caregiving, which are all associated with depressive symptoms or diagnosis (Dennerstein et al., 2004; Kessler et al., 2004; Marks, 1998; Sbarra et al., 2014).

Risk for recurrence of depression at midlife appears to peak in midlife for women, but in older age for men (Draper and Low, 2009). Differential risk by gender for new onset and recurrence may be conferred by the perimenopause for women (Bromberger et al., 2015; Cohen et al., 2006), although mixed findings suggest that this risk is not solely

conferred by biological changes (Gibbs et al., 2012; Hickey et al., 2012; Soares, 2013).

Family and lifetime history of depression may confer risk above and beyond other biological risks during this period (Colvin et al., 2014).

Little is known about whether reported protective benefits of R/S remain consistent across the lifespan. One cross-sectional study showed there are differential associations by gender between spirituality and depression at midlife, with men's (but not women's) self-report of level of spirituality inversely associated with depression (Ellermann and Reed, 2001). Only one longitudinal study has shown that R/S is protective against depression and is associated with mental well-being at midlife (Dillon and Wink, 2007), with other studies showing protective benefits of R/S against depression in geriatric samples (Braam et al., 2001; Cruz et al., 2009; Hayward et al., 2012; Koenig, 2007; Li et al., 2016; Sun et al., 2012).

In summary, there are few longitudinal studies examining the association between R/S and depression at midlife. With the role and developmental changes unique to this stage contributing to increased risk for depression, an understanding of whether R/S is protective against MDD at midlife is prudent. To address this gap in the literature, we pose the following research questions:

- 1) *Is R/S associated with onset or recurrence of depression at midlife?*
- 2) *Does the association between R/S and depression at midlife differ by familial risk for depression?*

2. Method

The data for this study come from assessments at year 20 and year 25/30 of a 30-year longitudinal study of individuals at high and low risk for major depression. The

participants, offspring at high risk and low risk for depression (based on parental status) were part of a previous study (Miller et al., 2012) and were interviewed at their most recent assessment timepoint. The majority of subjects were last assessed at year 30 ($n=63$, $M = 49$ years). A smaller subset of the sample ($n=16$, $M = 40$ years) was offered the opportunity to participate in an imaging study at year 25. As not all of the original sample returned for the year 30 assessment, these subsets of the original sample were combined and the timepoint is referenced henceforth as year 25/30. The study was approved by the Institutional Review Board at both Yale University and Columbia University/New York State Psychiatric Institute.

The original study consisted of probands with moderate to severe MDD who received outpatient psychopharmacologic treatment of depression. Healthy matched subjects were simultaneously selected from a sample of adults with no psychiatric history from the same community. Full methodological details have been published elsewhere (Weissman et al., 2016b, 2006, 1997) and are summarized here. The original probands were mainly working class or middle-class Caucasians from the New England area to reduce heterogeneity, as was customary when the study commenced. At each wave, assessments were conducted by clinical interviewers who were blind to the proband's clinical status and the subject's clinical history. Biological offspring were then followed. Offspring with one or more parent with MDD were identified as *high risk* (HR) and offspring with no parents with MDD were identified as *low risk* (LR).

2.1 Study participants

Study participants were a subset of the original offspring subjects in the 1997 and 2012 studies. In the first study, 151 offspring were eligible for the study. In the second

study, a final group of 114 offspring were eligible for the study if they participated in the study at both year 10 and year 20, reported their religion consistently at both time points and answered three items on R/S (refer to Assessments below) at both time points, and were assessed for psychiatric diagnoses at year 20. Offspring who did not report their denomination as Catholic or Protestant were excluded to keep consistent with the initial study in which denomination group was used a grouping variable (Miller et al., 1997). Of the 114 subjects who were included in the previous sample 35 did not participate in the year 25 or year 30 assessment ($79/114 = 69.2\%$): 25 declined, 7 could not be located or scheduled, and 3 did not complete questions on R/S at year 25 or year 30. The 79 participants included in the sample and the 35 who did not participate were compared on gender, age, risk status, MDD status between year 10 and year 20, lifetime history of depression at year 20, and religiosity variables at year 20. The only significant difference between groups was that of frequency of service attendance ($35 = 40\%$, $79 = 63\%$, $\chi^2 = 5.34$, $p = 0.02$), such that individuals who dropped out were less likely to attend services at least once a month than those who stayed in.

2.2 Assessments

Major depression was assessed at all timepoints with the Schedule for Affective Disorders and Schizophrenia Lifetime Version (SADS) for adults (Mannuzza et al., 1986). A diagnosis of MDD at year 20 was defined as a major depressive episode between year 10 and year 20 and a diagnosis of MDD at year 25/30 was defined as a major depressive episode between year 20 and year 25 or year 30, respectively.

Assessment of religiosity at year 20 and year 25/30 was based on three self-report items: 1) personal importance of religion/spirituality (“How important to you is religion

or spirituality?” with response options ranging from 1 [not important at all] to 4 [highly important]); 2) frequency of attendance (“How often, if at all, do you attend church, synagogue, or other religious or spiritual services?” with five response choices ranging from “never” to “once a week or more”); and 3) current religious denomination (“How would you describe your current religious beliefs? Is there a particular denomination or religious organization that you are part of?” with 10 denominations specified, including an opportunity to specify others. R/S was composed of these three variables in the analyses at year 20 and year 25/30. Personal importance of R/S and frequency of attendance were dichotomized into binary variables to remain consistent with previous studies (Miller et al., 2012, 1997). Personal importance was split into high importance (ratings equal to 4) and low importance (ratings <4). Frequency of attendance was split into high frequency (≥ 1 time per month) and low frequency (< 1 time per month).

2.3 Interviewers and best-estimate procedure

Masters and doctoral level mental health workers who were blind to parents' clinical status and any previous history, including religion variables, administered diagnostic clinical interviews. Multiple informants and sources were used, including first-person and corroborative interviews and medical records. All final diagnoses were based on best-estimate procedure (Leckman et al., 1982) by either a psychiatrist or a Ph.D. psychologist who was blind to the risk status and was not involved with interviewing.

2.4 Statistical analysis

McNemar tests were used for preliminary analyses of within-group differences in demographic variables, rates of depression, and R/S variables in the sample group between year 20 and year 25/30. Chi-square tests were used for between-group

differences between risk groups at year 25/30. Logistic regression analyses examined religiosity as a prospective protective factor against major depression. Year 25/30 major depression was the dichotomous outcome variable and each of the year 20 religiosity variables were used individually to conduct univariate regression and then together in multivariate regression. Age, sex, parental depression (risk) status, and lifetime history of MDD were included to control for potential confounds.

As previous findings have shown differential associations by risk and by lifetime history of depression, we sought to determine whether risk for depression (based on parental lifetime depression status) moderated the effect of R/S on subsequent recurrence and new onset of depression. The data were stratified both by risk status and lifetime history of depression (yes/no). Within these stratified groups, logistic regression analyses examined the three R/S variables at year 20 as predictors of the outcome of depression at year 25/30. Age and gender were included as covariates in the analysis.

3. Results

3.1 Sample characteristics

Table 1 summarizes the demographic and clinical variables and responses to the three religiosity items at year 25/30 for the 79 participants whose data were included in the analysis. The data is stratified by risk. In the period between year 20 and year 25/30 (data not shown), there were overall increases in the lifetime rate of depression (year 20 = 51%, year 25/30 = 58%, $p = 0.03$), the rate of frequent attendance (year 20 = 32%, year 25/30 = 43%, $p < 0.001$), and changes in marital status (year 20, married = 62%, year 25/30, married = 75%, $p = 0.03$). The rates of marital status, income, and education did not differ between risk groups at year 25/30.

The rate of lifetime major depression at year 20 was twice as great in the high-risk group as the low-risk group (61% [33/54] compared with 28% [7/25]; $\chi^2 = 7.50$, $df = 1$, $p < 0.01$). However, prevalence of major depression between year 20 and year 25/30 did not differ significantly between the high-risk group and the low-risk group (37% [20/54] compared with 24% [6/25]). Although the rates of importance and attendance were consistently greater at year 20 and year 25/30 in the low risk group as compared to the high-risk group, these differences were not statistically significant.

3.2 Religiosity and major depression

Table 2 lists, for each of the three R/S variables, the odds ratios for major depression at 25/30-year follow-up while controlling for age, sex, risk status, and history of depression of offspring in the full sample. Participants with high personal importance of R/S compared with other participants had about four times the risk of having an episode of major depression between year 20 and year 25/30 (OR = 4.10, 95% CI = 1.14-14.73, $p = .03$). Frequent attendance at religious services at year 20 was significantly associated with the odds of major depression between year 20 and year 25/30, such that participants who attended religious services at least once a month were four times as likely to experience a major depressive episode than those who did not (OR = 4.07, 95% CI = 1.05-15.70, $p = .04$). These findings became insignificant in the multivariate analysis, likely due to the high degree of correlation between the items measuring importance of R/S and frequency of attendance. Religious denomination at year 20 was not associated with MDD at year 25/30.

3.3 Recurrence versus new onset of major depression

Table 3 lists the odds ratios for recurrence and new onset of major depression at 25/30-year follow-up while controlling for age and sex of offspring for each of the three religiosity variables. Participants with no previous history of depression and reported high personal importance of R/S had about 14 times the risk of having an episode of major depression between year 20 and year 25/30 (OR = 14.42; 95% CI = 1.06-196.51, $p = .05$), regardless of risk status. For participants with a previous history of depression, there was a significant association between frequent attendance at year 20 and recurrence of major depression between year 20 and year 25/30 (OR = 6.44; 95% CI = 1.13-36.65, $p = .04$). When stratified by risk (data not shown), this association held only in the HR group (OR = 9.54; 95% CI = 1.18-77.32, $p = .04$). To test the hypothesis that the above finding was due to the fact that individuals with recurrent depression at year 25/30 were more likely to be frequent attenders at year 20 because they were more likely to be depressed between year 10 and year 20, we examined the association between MDD at year 20 (defined as an episode of MDD between year 10 and year 20) and attendance at year 20. If this hypothesis were true, we would expect to find that participants with MDD between year 10 and year 20 would be more likely to attend religious services at year 20; however, we found no significant association between these two variables at year 20, implying that the data did not support this hypothesis.

4. Discussion

With the shift into midlife in our longitudinal study sample, we found overall increases in the lifetime rate of depression and frequency of attendance at religious services (≥ 1 time per month), and significant changes in marital status in the entire sample between year 20 and year 25/30. When divided by familial risk for depression

(HR and LR), rates of diagnosis of MDD between year 20 and year 25/30 (new onset and recurrence combined) did not differ significantly as compared to significantly different lifetime rates of MDD between HR and LR groups at year 20, with the HR group having significantly higher rates of depression than the LR group. Rates of importance of R/S and frequent attendance did not differ significantly between the groups. Importance of R/S and frequent attendance of religious services at year 20 predicted MDD at year 25/30. When the group was divided based on both lifetime history of MDD (yes/no) and risk status (HR/LR), importance of R/S at year 20 was predictive of new onset of MDD at year 25/30 across groups. Attending religious services at least once a month was predictive of recurrence of MDD between year 20 and year 25/30 uniquely in the HR group.

4.1 Research questions

1) Is R/S associated with depression at midlife?

In this sample, regardless of risk status, the importance of R/S at year 20 was associated with a 14-fold increased risk of new onset of MDD at year 25/30. Frequency of attendance and denomination did not predict a new onset, suggesting that importance of R/S confers unique risk (among these three measures of R/S) for depression at midlife for those who have never experienced a depressive episode before. In that the importance of R/S previously was found in the same sample to be protective against depression during early and mid-adulthood, these longitudinal findings may suggest a *changing* relationship between R/S and depression across adult development, with risk for depression posed at midlife.

That developmental risk for new onset of depression was 14-fold for those who reported that R/S was important is in contrast to the small body of research on R/S at midlife, which suggests that R/S is associated with mental well-being at midlife (Dillon and Wink, 2007; Ellermann and Reed, 2001). Importantly, the self-rated level of R/S in this sample is, on average, much higher than in Dillon & Wink's sample. Taken with the previous findings that dimensions of R/S have been protective in this sample, individuals' wellbeing in this sample may be closely tied to a personal importance of R/S. We can conjecture that protective benefits may be mitigated and even reversed via aspects of R/S identified (but not measured here) in the literature as mediators of the direct association between R/S and depression such as intrinsic religiosity, negative religious coping, or spiritual struggle (Abu-Raiya et al., 2015; Braam et al., 2014; Pargament et al., 2004; Pearce and Koenig, 2016; Pirutinsky and Rosmarin, 2018; Smith et al., 2003; Sternthal et al., 2010).

2) Does the association between R/S and depression at midlife differ by risk group?

Although the association between importance of R/S did not confer a differential risk for depression between HR and LR groups, we found that frequency of attendance at year 20 was associated with an increased risk of recurrence of depression in midlife by 10 times in the HR group. Longitudinal data on the original depressed probands of this study illustrate that the protective effect of church attendance has rather been associated with risk when controlling for other R/S variables at midlife (Miller et al., 1997), suggesting a familial susceptibility to recurrent depression that offsets any protective capacity of frequent attendance at this stage. Alternately, individuals at HR for depression may seek

out companionship or social support through religious community (Ano and Vasconcelles, 2005; Ellison et al., 1994; Holt et al., 2013), which may explain this association.

4.2 Clinical Implications

Although the majority of studies show a strong protective benefit of R/S against depression, other studies have shown R/S to be a risk factor for depression under potentially distorting conditions of parental psychopathology or developmental psychopathology (Gur et al., 2005; Miller et al., 2002; Sorenson et al., 1995) or when missing central protective qualities such as connection to God (Kendler et al., 1997; Pargament et al., 2005). A host of treatment models have been published that integrate R/S into psychotherapy (Koenig, 2012; Koszycki et al., 2014; Pargament, 2007; Pearce et al., 2015; Santiago and Gall, 2016; for reviews see Hodge, 2006; McCullough, 1999; Smith et al., 2007). Further, there is data to suggest that some religious individuals avoid psychotherapy due to both perceptions about and actual tendencies of clinicians to in marginalize or exclude faith beliefs in the treatment process (Bergin, 1991; Delaney et al., 2007; Hathaway et al., 2004; Mayers et al., 2007; Richards and Bergin, 2000; Shafranske and Gorsuch, 1984). This, in combination with recent findings that more than half of treating clinicians do not feel competent addressing patients' religiosity and spirituality (Vieten et al., 2016, 2013) suggests that efforts to bridge the gap between patient beliefs and clinician readiness should focus on aspects of clinical training.

4.3 Limitations

To the best of our knowledge the current study is the first longitudinal study to assess the changing relationship between R/S and depression at midlife. Study limitations include difficulty in generalizing these findings due to the sample's size, and

demographically homogeneous makeup. To remain consistent with other studies using this sample, religiosity and spirituality are not distinguished as separate variables in this study and are dichotomized. In this high risk longitudinal sample, there was a high rate of individuals with previous depressive episodes and a small number of cases of new onset of depression. Additionally, the width of confidence intervals in the regression analyses were large. Finally, the significant difference in frequency of attendance between the retained sample and those who did not participate from the previous study suggests that individuals who frequently attended religious/spiritual services were more likely to participate in the study. Thus, these findings must be interpreted with caution.

5. Conclusion

The current longitudinal, prospective study shows R/S is associated with a 14-fold increase in risk for depression at midlife in the same sample of adults to have derived a 75% protective benefit against depression during early and mid-adulthood. This life-course study raises the possibility of a changing relationship between R/S and depression across adult development. This interpretation is supported by the longitudinal nature of the study, specifically in that the association of R/S and depression changes across the lifecourse from offering sustained protective benefits through emerging and early adulthood, to then conferring risk across risk groups at midlife. Alongside evidence that R/S guards against depression among younger and older adults, this study may highlight a developmental effect specific to midlife that is subject to further change at future timepoints.

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TABLE 1

Demographic, Religiosity, and Clinical Characteristics of 79 Adult Offspring of Depressed and Nondepressed Parents at 25/30-Year Follow-Up in a 30-Year Study

Characteristic				
	<u>Low Risk (N=25)</u>		<u>High Risk (N=54)</u>	
	Mean	SD	Mean	SD
Age	45.8	5.4	48.2	7.4
	N	%	N	%
Female	14	56.0	35	64.8
Annual income (\$)				
<20,000 (low)	1	4.0	2	3.7
20,000-39,000 (medium)	3	12.0	5	9.3
>40,000 (high)	21	84.0	43	79.6
Education level				
<High school	0	0.0	1	1.9
High school graduate	6	24.0	14	25.9
>High school	19	76.0	39	72.2
Marital status				
Single	2	8.0	5	9.3
Married	21	84.0	38	70.4
Separated or divorced	2	8.0	11	20.4
Religiosity				
Personal importance of religion/spirituality				
High	12	48.0	23	42.6
Moderate	12	48.0	20	37.0
Slight	1	4.0	7	13.0
None	0	0.0	4	7.4
Frequent attendance at religious/spiritual services ^a	13	52.0	21	38.9
Religious denomination				
Protestant	3	12.0	8	14.8
Catholic	19	76.0	34	63.0
Clinical characteristics				
Major depression ^b				
Lifetime episode (at year 20)**	7	28.0	33	61.1
Episode between year 20 and year 25/30	6	24.0	20	37.0

^aAttends at least once a month.

^bAssessed with the Schedule for Affective Disorders and Schizophrenia-Lifetime Version

**Significant difference between group at $p < .01$.

TABLE 2

Odds Ratios of Recurrence or Onset of Major Depressive Disorder in 79 Adult Offspring of Depressed and Nondepressed Parents Between 20- and 25/30-Year Follow-Ups Associated with Religiosity Variables at Year 20

Religiosity Variable	Univariate Models ^a				Multivariate Models ^b			
	Odds Ratio	95% CI	Wald χ^2	<i>p</i>	Odds Ratio	95% CI	Wald χ^2	<i>p</i>
Religion/spirituality highly important	4.10	1.14-14.73	4.69	0.03	3.02	0.73-12.42	2.34	0.13
Frequent attendance at religious/spiritual services	4.07	1.05-15.70	4.15	0.04	3.59	0.75-17.24	2.55	0.11
Catholic (vs. Protestant)	1.45	0.26-8.15	0.18	0.67	1.71	0.26-11.26	0.31	0.58

^aFor each of the three univariate models, the outcome measure is major depressive disorder at year 25/30 (yes/no) and the primary predictor is the dichotomous religiosity variable at year 20. Sex, age, history of depression, and risk status (high or low, based on parental depression status) are controlled.

^bFor the multivariate model, the outcome measure is major depressive disorder at year 25/30 (yes/no) and the primary predictor is the dichotomous religiosity variable at year 20. Sex, age, history of depression, risk status (high or low), and each of the other two dichotomous religiosity variables are controlled.

TABLE 3

Odds Ratios of Recurrence and New Onset of Major Depressive Disorder in 79 Adult Offspring of Depressed and Nondepressed Parents Between 20- and 25/30-Year Follow-Ups Associated with Religiosity Variables at Year 20

Religiosity Variable	Recurrence ^a				New Onset ^b			
	Odds Ratio	95% CI	Wald χ^2	<i>p</i>	Odds Ratio	95% CI	Wald χ^2	<i>p</i>
Religion/spirituality highly important	2.44	0.57-10.46	1.44	0.23	14.42	1.06-196.51	4.01	0.05
Frequent attendance at religious/spiritual services	6.44	1.13-36.65	0.04	0.04	1.41	0.19-10.52	0.11	0.74
Catholic (vs. Protestant)	0.57	0.06-4.95	0.27	0.61	5.6*10 ⁸	0.00	0.00	0.99

^a For this model, the outcome measure is recurrence of MDD, as defined by having a previous episode of MDD prior to the period between year 20 and year 25/30. Sex and age are controlled.

^b For this model, the outcome measure is new onset of MDD, as defined by having no episodes of MDD prior to the period between year 20 and year 25/30. Sex and age are controlled.