The effect of spirituality and religious attendance on the relationship between psychological distress and negative life events

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Abstract

Purpose—The aim of this study was to assess the effect of religious attendance and spirituality on the relationship between negative life events and psychological distress.

Methods—This was a cross-sectional study of 1,071 community dwelling adults from East Baltimore, Maryland who participated in the fourth (2004–2005) wave of the Baltimore Epidemiologic Catchment Area study. The 20-item General Health Questionnaire (GHQ-20) was used to measure psychological distress. Multiple regression models were used to assess the association between negative life events and distress as well as to measure the effect of religious attendance and spirituality on the association between psychological distress and negative events while adjusting for demographic variables, past distress and social support from friends and relatives.

Results—In pooled analysis, negative events were significant predictors of distress, $b = 1.00$, $\beta = 0.072$, $p < 0.05$. Religious attendance and spirituality did not affect or modify the association between negative events and distress. However, religious attendance was inversely associated with distress with higher frequency of attendance associated with lower distress after controlling for demographic and social support factors, $b = -2.10$, $\beta = -.110$, $p < 0.01$ for attending 1–3 times a month; $b = -2.39$, $\beta = -0.156$, $p < 0.01$ for attending weekly; and $b = -3.13$, $\beta = -0.160$, $p < 0.001$

Conflict of interest The authors declare that they have no conflict of interest.

for attending more than once per week. In stratified analysis, negative events were associated with distress for those who were low on spirituality, $b = 1.23$, $\beta = 0.092$, $p < .05$, but not for those who were high on spirituality; the association between religious attendance and decreased distress was true only for those scoring high in spirituality. Social support accounted for some of the inverse association between religious and distress.

Conclusion—Religious attendance and spirituality may play a role in how people experience and deal with difficult life situations.

Keywords

Distress; ECA; Negative life events; Religious attendance; Spirituality

Introduction

Negative life events have been associated with poor mental health outcomes [1], yet coping with negative life events is inevitable over the life-course. Religious coping is arguably one of the most powerful coping mechanisms [2] and has the potential to buffer the damaging effects of negative life events on psychological functioning [3]. Religion and spirituality are often mentioned together, so it is important to have an understanding of what these constructs mean. There is no general consensus on the definition of spirituality [4]. Contemporary definitions contend that spirituality is a search for the sacred not bound by religion, but rather a personal construct that individuals can define for themselves [5]. It is "…a personal search for meaning and purpose in life, which may or may not be related to religion" [6, p. 506]. However, more traditional definitions of spirituality posit that being religious is a necessary, although not sufficient, requirement of being spiritual and that people who are spiritual are a subset of those who are deeply religious [5]. Pargament defines it as "a search for the sacred" where the sacred "…encompasses concepts of God, the divine, and the transcendent, but …also includes objects, attributes, or qualities that become sanctified by virtue of their association with or representation of the holy" [7, p 12]. To measure spirituality, the three following questions are asked: religious involvement, spirituality in general, such as a sense of connectedness or transcendence to something beyond oneself, and positive psychological states such as inquiring about whether or not one believes that there is an ultimate purpose for their life [4].

Definitions of religion, however, are generally agreed upon. Religion is seen in an institutional context and, whether practiced alone or in an organizational context, generally involves beliefs, practices or ceremonial acts related to a higher power [4]. Experts in the field have addressed both specific and general dimensions of religion that may offer comfort in times of distress. For example, religious orientation refers to a general, global frame of reference from which one can understand life both in times of stress and in times of peace. Religious orientation can be measured in a variety of ways including assessment of personal religious expressions (e.g., salience, beliefs, faith and prayer) or organizational religious expressions (e.g., religious attendance [8]). On the other hand, religious coping refers to specific expressions of faith during times of stress, such as attributing negative life events to the will of God [8]. In the face of negative life events, several facets of religion have been linked to positive coping and lower distress levels. For example, among parents who lost a

child, higher frequencies of religious attendance were associated with greater perceptions of social support and understanding of the loss [9]. In addition, religious importance was associated with better cognitive processing of as well as finding meaning in the loss. Furthermore, religious importance was indirectly associated with better well-being and religious attendance was indirectly related to better well-being and less distress. In the same study, the relationship between religious attendance and well-being and distress was mediated by social support [9]. In another study, a secure attachment to God among participants who were grieving the death of a significant other in the past year was associated with lower levels of depression and grief [10]. Additionally, positive religious coping predicted positive mental adjustment among male cancer patients [11]. Likewise, positive religious coping was inversely associated with depressive symptoms following divorce [12].

Despite the reported benefits of religion on mental health outcomes, there are inconsistencies in the literature examining the role of religion in relation to negative life events and distress. For example, some researches in this area show either no relationship between religion and psychological distress [13] or have found a positive relationship between the two variables. For example, Brown et al. [14] found that among Blacks in the USA, a positive correlation was found between perceived economic strain and level of depression, but religious involvement interacted significantly with this relationship in that in the context of economic strain, higher religious involvement was related to greater depressive symptoms as compared to those who had less religious involvement. Elsewhere, Schwadel and Falci [15] failed to find an overall relationship between religious involvement (church attendance) and depressive symptoms but they did find an interaction between levels of religious attendance and religious affiliation such that low attendance was positively associated with increased depressive symptoms for non-evangelical protestants and catholics but not for evangelical protestants. Also, religious attendance had no relationship with positive affect for their sample. Similarly, Maselko et al.[16] reported that religious attendance was associated with 30 % lower odds for lifetime prevalence for depression in their sample but religious well-being—which was defined as a feeling that one was closer to God or had a meaningful relationship to God—was associated with 50 % increased risk for depression. These inconsistencies suggest that we have yet to understand the complex ways in which religion and spirituality impact the human psychology, specifically psychological distress, in the context of adverse life events.

The present study assessed the effect of religious attendance and spirituality on the relationship between negative events and psychological distress while accounting for potential confounders which included age, race, gender, past psychological distress and social support factors. We included social support factors and past distress as covariates because studies show that social support may be associated with better mental health [17]. It may also confound the relationship between psychological distress and negative life events as it may be associated with both constructs [18, 19]. Additionally, social support has been studied as one of the mechanisms through which religious attendance may yield a positive impact on physical and mental health [20–22]. We adjusted for past distress because past distress has been shown to impact current appraisals of stressors [23].

For the purpose of our study, we conceptualized spirituality as the importance of a belief in God in one's life and seeking guidance and comfort from God. Our study addressed the following five aims. First, we assessed the relationship between recent negative life events experienced within the last year and psychological distress. We hypothesized that recent negative life events would be significant predictors of psychological distress after adjusting for effects of age, race, gender and past distress. Second, we assessed the relationship between religious attendance and psychological distress. We hypothesized that frequency of religious attendance would be inversely related to level of psychological distress. Third, we assessed the relationship between spirituality and psychological distress. We hypothesized that importance of spirituality in one's daily life would be inversely related to level of psychological distress. Fourth, we assessed the effect of religious attendance on the relationship between negative life events and psychological distress. We hypothesized that the association between negative life events and distress would be smaller for respondents who attend religious services frequently as compared to those who attend religious services rarely or never. Fifth, we assessed the effect of spirituality on the relationship between negative life events and psychological distress. We hypothesized that the association between negative life events and psychological distress would be smaller for respondents who reported a high level of spirituality as compared to those who reported a low level of spirituality.

To test the above-stated hypotheses, we used multiple regression models and conducted a cross-sectional analysis of relationships between current distress, negative life events within the past 1 year, religious attendance and spirituality while adjusting for demographic variables, past distress and social support from friends and relatives.

Methods

Participants and procedures

This study used data from the Baltimore Epidemiologic Catchment Area Follow-up (ECA) Study which was part of a larger national, prospective cohort, multi-center study administered at five different sites in the USA (i.e., St. Louis, MO, Los Angeles, CA, Baltimore, MD, Hartford CT, and Raleigh/Durham, NC). The study was commissioned by the National Institute of Mental Health (NIMH) to ascertain the prevalence and incidence of psychiatric and substance abuse disorders in the general population.

The present study utilized ECA data collected in Baltimore, Maryland, where respondents were selected probabilistically from a sample frame of 175,211. The baseline interviews were conducted in 1981 (Wave 1, $N = 3,481$), with follow-up interviews in 1982 (Wave 2, $N = 2,768$), between 1993 and 1996 (Wave 3, $N = 1,920$) and between 2004 and 2005 (Wave 4, $N = 1,071$) [24]. Attrition in the sample was cumulative in that those who were lost to attrition or who refused participation in one wave were not included in the following waves. Of the survivors interviewed in 1981 at Wave 1, 31 % participated in Wave 4 (2004 and 2005). Causes of attrition included deaths, relocations, and refusals to participate.

The survey in the Baltimore site included items to assess psychological distress, major positive or negative life events, utilization of health services, physical health, availability of

social support and questions on religions attendance and importance of spirituality in one's daily life. Detailed description of the procedures and methodology for this survey are reported elsewhere [25, 26]. The sample for the present study consisted of 1,071 individuals who were interviewed at Wave 4.

Measures

Psychological distress—Psychological distress at Wave 4 was the outcome variable in this study and was measured by the General Health Questionnaire (GHQ) which has been used extensively within the USA and around the world to assess psychological distress and psychiatric morbidity in non-clinical samples [27, 28]. The items address symptoms of low mood and anxiety as well as functional and cognitive impairment in daily life. Responses are made using a four-point Likert scale where response options include better than usual, same as usual, less than usual, and much less than usual. The ECA study used the 20-item version of the GHQ with a maximum possible score of 60, where higher scores indicated greater distress. The 20 GHQ items were summed and the total was used as a continuous variable. When a respondent had missing data for up to 17 items on the GHQ, the ECA research team imputed the respondent's missing score on an item by replacing it with his/her average GHQ score. When respondents missed more than 17 items, their total GHQ score was considered to be missing.

One hundred and twenty-nine (12 %) respondents were missing their total GHQ score at Wave 4. We analyzed the missing vs. non-missing groups and found no significant differences between the two groups on any of the variables of interest. The groups did differ by age, race and religious preference; the group with missing GHQ scores consisted of 76 % Whites as compared to 24 % non-Whites, χ^2 (1, $N = 1,071$) = 12.5, $p < 0.001$; they tended to be 65 years or older, χ^2 (1, $N = 1,071$) = 22.3, $p < 0.001$, and the missing group had a greater number of respondents who were Protestants or who had no religious preference as compared to the non-missing group, χ^2 (6, $N = 1,026$) = 50.06, $p < 0.001$.

In the present study, the GHQ score from Wave 3 was included as a control variable, while GHQ score from Wave 4 was the outcome variable. In the following text, we will use the term 'past distress' when referring to the GHQ scores from Wave 3 and will use the term 'distress' to refer to current distress as measured by the GHQ score at Wave 4.

Negative life events—Respondents were asked a series of questions about life events such as divorce, retirement, pregnancy, onset of illness, etc., that may have occurred since the last interview date. The present study focused on events that would be experienced as adverse by most people, i.e., we included events that either comprised some form of separation or loss, or could be considered threats to health or safety. The specific items included were marital separation, divorce, widowhood, death of a loved one (other than spouse), loss of employment, a life threatening illness or injury, and having experienced something extremely "horrifying or frightening" such as physical or sexual assault, combat or natural disasters. This yielded seven variables, one for each negative life event. We then generated a single dichotomous variable for negative events at Wave 4, where responses were coded 1 if one or more negative events had occurred within 1 year of the interview date

and 0 if either no negative event was reported since the last interview or if one or more such events occurred more than a year ago since the last interview. The rationale for separating events that occurred within the past 1 year of the interview was the idea that negative events and distress would be time-dependant in that most recent events would be most salient and would be most likely to affect distress. In the preceding sections, we will refer to negative life events as 'negative events'.

Religious attendance and spirituality—The ECA questionnaire included questions related to religion and spirituality. The first question asked about frequency of attendance at religious services with a 5-point Likert type scale. Response choices included *never*, *less than once a month*, *1–3 times a month*, *about once a week,* and *more than once a week*. In linear regression analyses in which religious attendance was a predictor variable, indicator variables were created for the five categories of attendance and *never attend* was the reference group. Religious attendance was also used as a stratification variable. In this case, frequency of attendance at religious services was dichotomized into "high religious attendees" (*more than once a week, about once a week,* or *1–3 times a month*) and "low religious attendees" (*less than once a month* or *never*). The remaining three questions were related to spirituality, specifically about the importance and relevance of spiritual beliefs in one's daily life. The first question was "In general, how important are religious or spiritual beliefs in your daily life?" Responses included 1 = *very important,* 2 = *somewhat important,* 3 = *not very important,* and 4 = *not at all important*. The other two questions were "When you have problems or difficulties in your family, work, or personal life, how often do you seek spiritual comfort?" and "When you have decisions to make in your daily life, how often do you ask yourself what God would want you to do?" Response options for both of these questions were 1 = *almost always,* 2 = *often,* 3 = *sometimes,* 4 = *rarely* and 5 = *never*. These three questions were combined and summed into a single continuous variable called "spirituality" with a maximum possible score of 14 where a lower score indicated greater importance of spirituality. The internal consistency of this scale was acceptable ($a = 0.788$). Spirituality was also used as a stratification variable. For stratification, the total score distribution was divided into three tertiles where, since lower scores meant greater spirituality, tertile 1 was considered the "high spiritual" category, while tertiles 2 and 3 were combined and considered the "low spiritual" category.

Social support—Questions on social support were derived from the National Comorbidity Survey [29] and were included in the ECA questionnaire for Wave 4. Social support was measured by two sets of identical questions with six items in each set. One set measured the extent of support received from friends and the other set measured the extent of support received from relatives. In each set, three items were related to support received (e.g., "How much can you rely on your friends for help if you have a serious problem?") and three related to negative interactions (e.g., "How often do they let you down when you are counting on them?"). The response values for these questions were *a lot, some, a little,* and *not at all*. The scoring for negative items was reversed. The six items were combined and summed yielding a maximum possible score of 24; higher scores indicated greater support. When used in linear regression analyses, the social support variables were used as continuous variables.

Socio-demographic variables—Additional variables included in the analysis were age, gender and race. The age variable was divided into four categories namely 18–29, 30–44, 45–64 and 65 years or over. At the time of Wave 4, all respondents were over 30 years of age so the variable had the latter three categories by default. Respondents aged 30–44 years were the reference group. For gender, male was the reference group. Race was dichotomized into Whites (non-Hispanic) and non-Whites. Reference group was Whites. Non-Whites included African Americans, American Indians, Pacific Islanders, Asians and Hispanics.

Data analysis

Data were analyzed using Stata Special Edition version 10.1 [30]. Exploratory data analyses were computed to examine sample distributions of GHQ scores, negative events, religious attendance, importance of spirituality, social support and the demographic variables. A correlation matrix showed that none of the variables in the matrix had high enough correlations to suggest problems of collinearity. Problems of multicollinearity were ruled out by computing variance inflation factor (VIF) [31]. An average VIF of 1.73 ruled out any problems of multicollinearity among the variables.

Next we estimated linear regression models to assess the relationship between negative events and GHQ scores at Wave 4 while adjusting for demographic factors and past distress. Then we added religious attendance and spirituality as additional predictor variables in the model, followed by social support factors added in the final model. To assess the moderating effect of religious activity and spirituality on negative events and distress, we ran additional models with interaction terms between negative events and religious attendance and between negative events and spirituality. Next we ran regression models stratified by high and low levels of religious attendance and high and low spirituality.

Results

Sample characteristics

The sample was 63 % female and 61.8 % reported their race/ethnicity as White (Table 1). Among the 38.2 % non-Whites, 91.4 % reported African American as their race/ethnicity and the remaining 8.5 % respondents endorsed "Other" as their race/ethnicity, which included Hispanic, Native American, Asian, and Pacific Islander. Less than 8 % of respondents were in the age range of 30–44 years, two-thirds were in the age range of 45–64 years and a quarter was aged 65 years or older. One-third of the sample identified itself as Protestant, another one-third as Catholic, and 24 % of respondents chose "Other" as their religious preference. More than half the sample reported attending religious services once a month or more frequently, although slightly less than half the sample endorsed to the importance of spiritual and religious beliefs in their daily lives. Forty-one percent reported a negative event within the year preceding the interview date.

Negative events and distress

We hypothesized that negative events during the past year would be positively related to current distress. The null hypothesis for this assertion was rejected as negative events were significant predictors of distress ($b = 1.00$, $\beta = 0.072$, $p < 0.05$) after adjusting for

demographic factors and past distress (Table 2, Model 1). The unstandardized coefficient of 1.00 indicates that the mean difference in distress score for those in the group with no negative life events was 1 point lower than those in the group with one or more negative life events. Past distress had the largest effect on current distress ($b = 0.37$, $\beta = 0.343$, $p < 0.001$) and was a consistent, strong, and significant predictor of current distress in all the models. This model accounted for 13 % of the variance in the distress score $F(6, 926) = 24.01$, $p < 0.001$.

Religious attendance, spirituality and distress

Our second hypothesis was that religious attendance would be negatively associated with current distress. The null hypothesis for this assertion was also rejected as respondents who attended religious services had significantly lower distress as compared to those who never attended services (Table 2, Model 2). There was a dose–response relationship between religious attendance and distress score ($b = -2.10$, $\beta = -0.110$, $p < 0.01$ for attending 1–3 times a month; $b = -2.39$, $\beta = -0.156$, $p < 0.01$ for attending weekly; and $b = -3.13$, $\beta = -0.160$, $p < 0.001$ for attending more than once per week). This association persisted even after adjusting for social support from friends and family (Table 2, Model 3). Our third hypothesis was that spirituality would be inversely associated with current distress. This hypothesis was rejected as spirituality was not a significant predictor of distress in any of the models. Contrarily, there was a general trend for higher spirituality to be associated with increased distress, although this did not reach significance level. Model 2 (Table 2) explained an additional 2 % of the variance in the distress score, $F(11, 892) = 15.21$, $p < .001$, while Model 3 with covariates of social support accounted for another 3 % of the variance $F(13, 878) = 15.69$, $p < 0.001$.

The effect of religious attendance and spirituality on the relationship between negative events and distress

To test the fourth hypothesis, we ran a regression model with an interaction term for negative events × religious attendance. We failed to reject the null hypothesis for this assertion as the interaction term was not significant (Table 3). Additionally, results from models stratified by high and low religious attendance (Table 5, Models 1 and 2) showed that negative events did not have a significant association with distress scores either for the low attendance or the high attendance group. What differentiated the two groups was the importance of social support from friends and family; for the high frequency religious attendees, those reporting higher support from friends ($b = -0.23$, $\beta = -0.104$, $p < 0.001$) and higher support from relatives ($b = -0.41$, $\beta = -0.193$, $p < 0.001$) had significantly lower levels of distress; this effect was not observed in the low frequency religious attendees. There was a trend for high spirituality to be associated with increased distress for the low frequency attendees and with decreased distress for the high frequency attendees, although this observation was not statistically significant.

The fifth and final hypothesis was assessed by running a regression model with an interaction term for negative events × spirituality. We failed to reject the null hypothesis for this assertion as the level of spirituality did not have a modifying effect on the relationship between negative events and distress (Table 4). However, results from models stratified by

high and low spirituality (Table 5, Models 3 and 4) showed that negative events had a small but significant association with increased distress in the low spiritual group ($b = 1.23$, $\beta = .092$, p .05) but had no association with distress for the high spiritual group. Religious attendance was inversely associated with distress among the high spiritual group ($b = -2.97$, $\beta = -.150$, $p < .05$ for those who attended religious services 1–3 times a week, $b = -2.65$, $\beta = -.180$, $p < .05$ for those who attended weekly, and $b = -3.36$, $\beta = -.210$, $p < .05$ for those who attended more than once a week). Religious attendance was not a significant predictor of distress for the low spirituality group.

We did a post hoc analysis using Chi-square tests to ascertain the difference in frequency of religious attendance by high versus low spirituality groups and found that 75.7 % of those who were high on spirituality attended services between once a month and more than once a week but only 39.3 % of those who were low on spirituality attended services in this same frequency ($\chi^2 = 132.86$, $p < .001$).

Discussion

The impact of religious attendance

The present study examined the roles of religious service attendance and spirituality on the relationship between negative events and current distress in the Baltimore ECA study sample. We failed to find any significant or direct effects of religious attendance and spirituality on the relationship between distress and negative events. However, our results showed that negative events and religious attendance each were independent and significant predictors of current distress after adjusting for age, race, gender, past distress and social support factors. The dose–response relationship between religious attendance and decreased distress was consistent with previous findings that have shown an inverse relationship between religious activity and distress [32, 33].

Our findings also supported previous assertions that social support may be one of the mechanisms through which religious attendance exerts positive impact on psychological health [34, 35]. It should be noted that our measure of social support comprised support from friends and relatives and not specifically from fellow-service attendees. However studies show that religious venues may be places where friendships initiate and flourish as similarity of religious preferences may mean similar world-views and similar norms about social interactions [35], including provision of social, emotional or financial support in times of crises [36]. Additionally, people to whom social support is important may prefer to exercise their beliefs in a forum that involves interpersonal interactions, such as church or other religious venues, which can in turn become a catalyst for mobilizing social support.

The impact of spirituality

Although level of spirituality did not have a direct effect on distress, our results showed that people who were low on spirituality were more likely to be distressed following negative events as compared to those who were high on spirituality, while the latter group showed an inverse relationship between religious activity and distress. In our sample, those with a high level of spirituality tended to attend services more frequently than those with lower levels of

spirituality so the positive influence of spirituality may have been due to the attendance factor which in turn may have been a catalyst to mobilize social support. This speculation was supported by the observation of a positive trend between spirituality and distress for the low frequency attendees and the negative trend between the two for high frequency attendees. Since spirituality was conceptualized in the context of God and the Divine in our study instead of in a secular context, one hypothesis may be that the expression and/or practice of spiritual beliefs in a shared or an organizational framework was important for those who endorsed such beliefs. It is possible that congregating with fellow believers reinforced one's sense of connectedness to the Divine which buffered against distress, while belief in a higher power without the social or organizational reinforcement leads to a sense of incongruence between what one believes (for e.g., a benevolent God) and what one is faced with (i.e., adverse life events); the incongruence thus results in increased distress. These speculations may be addressed in future studies.

An interesting aspect of our findings was the trend for a positive relationship between spirituality and distress in the pooled analysis. One possible explanation for this may be that along with importance of religion or spirituality in one's life and the tendency to turn to God at times of trouble, other dimensions of spirituality may have been at play that were not assessed in the present study, such as positive versus negative religious coping, or perception of divine control. Positive versus negative religious coping refers to different ways in which one can approach a stressor depending on the religious perspective taken [37, 38]. For example, positive religious coping may include seeking comfort from God, or viewing stressors as lessons or blessings from God, while negative coping may include viewing stressors as punishment from God [37]. Positive religious coping has been found to be related to positive outcomes for psychological well-being, while negative religious coping is related to distress or to poor psychological adjustment [39]. Similarly, the perception of God as all powerful may either be experienced as empowering or disempowering. For example, Schieman et al. [40] found that the notion of an omnipotent, all powerful God was associated with "personal mastery" and "personal empowerment" for African Americans, but for Whites it was associated with "relinquished control" and "diminished self-worth". In a different study, the concept of divine control had a negative relationship with distress for African Americans but a positive relationship with distress for Whites [41]. Hence the direction of association between spirituality and distress may depend on the way that people interpret and experience notions of spirituality.

Conclusion

There is a general consensus on the positive impact of religion and spirituality on physical and mental health, but not all research findings support this relationship. There are studies that have found either no relationship between religiosity and psychological distress [13] or have found a positive relationship between the two variables [14].

Neal Krause [42] presented a conceptual model to synthesize the myriad findings on religion and health. He stated that the benefits of religion were consistent with basic human needs such as the need for self-transcendence or to connect with a larger entity or ideal beyond one's self as theorized by Maslow [as cited in 43], and the needs to connect with fellow

human beings and for a sense of control in life as theorized by Hood [as cited in 42]. Krause noted that people attended religious venues as a way to express their relationship with a higher being, and that these venues satisfied the need for social connectedness, where social connectedness and perceived support from a higher being contributed to a greater sense of control over one's life or adverse events, which in turn lead to a greater sense of meaning and higher purpose of life, all of which culminated into better health outcomes [42]. While the present paper did not attempt to test Krause's conceptual model, our findings reflected some of the relationships proposed in his model. We did not find a direct association between spirituality and distress but we found that people who were more spiritual, i.e., more likely to seek God's guidance and comfort, were more likely to attend religious services, which in turn was related to greater social support. Additionally, both religious attendance and higher levels of social support were associated with lower distress. Furthermore, though it was not a specific aim of our study to compare traditional to contemporary definitions of spirituality, we found that those who were more spiritual were also more likely to engage in religious activity, which supports a traditional conceptualization of spirituality [5]. However, this overlap could also have been a result of the way we had conceptualized spirituality, i.e., in the context of God rather than as a secular concept.

There were several limitations of this study. First, the study included respondents mostly from the Christian faith within the USA so the findings may not be generalizable to other religious groups or to persons from non-western countries. Second, a 'yes' response on the dichotomous measure for negative events included one or more events so each positive response on this item could have carried a different weight and this was not accounted for in the present study. Third, there was substantial percentage of respondents who had a missing score on the GHQ which was the outcome variable and those respondents were not included in the analysis. It was not possible to determine whether the results would have been different if those respondents had been included in the analysis. However, there were no significant differences between groups with missing versus non-missing data on a range of variables. Fourth, the study included only two aspects of religiousness and spirituality, i.e., religious attendance and seeking guidance and comfort from God, while current research recognizes that the domains of religion and spirituality are multidimensional and multifaceted and encompass many dimensions of belief and practice in relation to a divine or transcendent being. Fifth, the final model for main effects explained only 18 % of variance in the outcome score. This suggests that other important variables remain to be addressed with regard to the role of religious/spiritual beliefs on adverse events and distress.

Finally, the sample used in this study may not be representative of the original population first sampled in 1981 or of the current population. Thirty-one percent of the original Wave 1 sample (1981) was retained in Wave 4 (2004 and 2005). The remaining respondents were lost to refusals, unavailability, deaths or relocations. This may have introduced selection bias to the sample. For example, it is possible that those who were likely to commit to follow up the study were also more likely to be committed to their religious beliefs or practices in distressing situations.

Despite these limitations, the study was strengthened by its relatively large population-based sample. The main implication of this study was that when social support and other demographic factors were held constant, religious attendance was related to lowered distress and this effect was largest for those who were high on spirituality. People who were low on spirituality were more likely to be adversely affected by negative events as compared to those who were more spiritual. These findings add to the body of research that attests to the beneficial effects of religion and spirituality on psychological health.

Acknowledgments

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Table 1

Characteristics of Baltimore ECA sample at Wave 4

	(*N* = 1,071)
Gender (%)	
Male	37.0
Female	63.0
Age (%)	
30–44	7.6
45–64	65.6
65+	26.8
Race (%)	
Caucasian Americans	61.8
African Americans	34.9
Native Americans	1.6
Hispanics	< 1.0
Asians	< 1.0
Pacific islanders	< 1.0
Marital status (%)	
Married	56.0
Never married	11.1
Widowed	14.7
Separated	4.1
Divorced	14.1
Religious preference (%)	
Protestant	34.0
Roman Catholic	33.8
Jewish	.8
None or no preference	6.0
Other	24.5
Refuse to answer	.9
GHQ 20 total score at Wave 3	
Mean (SD)	15.1 (6.2)
Median	14.0
GHQ 20 total score at Wave 4	
Mean (SD)	15.7 (6.8)
Median	14.0
Religious attendance (%)	
Never	18.4
Less than once a month	25.9
1–3 times a month	15.7
About once a week	25.7
More than once a week	13.9

	(*N* = 1,071)
Importance of spirituality	
Mean (SD)	6.6 (3.1)
Median	6.0
Importance of spirituality (based on tertiles, %)	
Low importance of spirituality	55.3
High importance of spirituality	44.6
Negative life events in the past year (%)	
No negative events	58.8
One or more negative events	41.2
Social support from friends	
Mean (SD)	19.6 (2.7)
Median	20
Social support from relatives	
Mean (SD)	19.5 (8.0)
Median	20

Table 2

Linear regression analysis for the Baltimore ECA sample with GHQ score at Wave 4 as outcome variable

Variables	Model 1			Model 2			Model 3		
	b	SE *b*	β	*b*	SE *b*	β	*b*	SE *b*	β
Gender (Ref: Male)[a]	1.21	0.44	0.085**	1.16	.45	.082*	1.21	0.45	0.086**
Age (Ref: 30–44 years)									
45–64	−0.10	0.77	−0.007	0.21	0.78	0.014	0.31	0.77	0.021
65+	0.43	0.84	0.027	0.97	0.86	0.061	1.50	0.85	0.095
Race (Ref: White)[b]	−0.45	0.43	−0.032	−0.34	0.44	−0.024	−0.69	0.44	−0.050
Negative life events[c]	1.00	0.42	0.072*	0.80	0.42	0.058	0.85	0.42	0.062*
GHQ score at Wave 3	0.37	0.03	0.343***	0.37	0.03	0.348***	0.33	0.03	0.309***
Religious attendance (Ref: Never attend)									
Less than once a month	–	–	–	−1.19	0.64	−0.077	−0.90	0.64	−0.059
1–3 times a month	–	–	–	−2.10	0.75	−0.110**	−1.88	0.75	−0.099*
Once a week	–	–	–	−2.39	0.69	−0.156**	−2.20	0.69	−0.143**
More than once a week	–	–	–	−3.13	0.83	−0.160***	−2.82	0.83	−0.145*
Spirituality[d]	–	–	–	−0.14	0.08	−0.066	−0.14	0.08	−0.065
Support from friends[e]	–	–	–	–	–	–	−0.19	0.08	−0.078*
Support from relatives[e]	–	–	–	–	–	–	−0.36	0.08	−0.151***
N	933			904			892		
R^2	0.134			0.157			0.188		
F(*df*)	24.01*** (6, 926)			15.21*** (11, 892)			15.69*** (13, 878)		

Model 1 GHQ score regressed on demographic variables, negative life events and GHQ score at Wave 3; *Model 2* GHQ score regressed on gender, negative life events, GHQ score at Wave 3, frequency of religious attendance and level of spirituality; *Model 3* GHQ score regressed on gender, negative life events, GHQ score at Wave 3, frequency of religious attendance, level of spirituality and social support from friends and relatives

*
$p < 0.05$;

**
$p < 0.01$;

***
$p < 0.001$

[a]Gender: 0 Male, 1 Female

[b]Race: 0 White, 1 Non-white

[c]Negative events: 0 = No events, 1 = one or more events within past year

[d]Spirituality: lower score means greater importance of spirituality

[e]Support from friends or relatives: higher number means greater support

Table 3

Pattern of interaction between negative life events and religious attendance

	Negative life events			
	b	*SE b*	*β*	*p*
Religious attendance (Ref Never attend)				
Less than once a month	0.61	1.29	0.028	0.634
1–3 times a month	−0.68	1.51	−0.022	0.650
Once a week	0.35	1.29	0.016	0.783
More than once a week	−0.00	1.49	−0.000	0.997
N	892			
R^2	0.189			
F(*df*)	12.01[***] (17, 874)			

Multiple regression model with GHQ score regressed on interaction term between negative life events and religious attendance while adjusting for gender, age, race, level of spirituality, GHQ score at Wave 3 and social support from friends and relatives

[***]
$p < 0.001$

Table 4

Pattern of interaction between negative life events and spirituality

	Negative life events			
	b	*SE b*	*β*	*p*
Spirituality	0.12	0.13	0.068	0.364
N	892			
R^2	0.189			
F(*df*)	14.62[***] (14, 877)			

Multiple regression model with GHQ score regressed on interaction term between negative life events and spirituality while adjusting for gender, age, race, frequency of religious attendance, GHQ score at Wave 3 and social support from friends and relatives

[***]
p <0 .001

Table 5

Multiple regression models stratified by high and low religious attendance and high and low spirituality

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE b	β	b	SE b	β	b	SE b	β	b	SE b	β
Gender (Ref: Male)[a]	1.53	0.72	0.102*	0.75	0.57	0.056	1.79	0.55	0.136**	0.34	0.76	0.021
Negative life events[b]	0.95	0.69	0.063	0.45	0.51	0.036	1.23	0.53	0.092*	0.05	0.66	0.003
Religious attendance (Ref: Never attend)												
Less than once a month	–	–	–	–	–	–	-1.25	0.70	-0.091	-0.06	1.41	-0.003
1–3 times a month	–	–	–	–	–	–	-1.10	0.87	-0.059	-2.97	1.44	-0.150*
Once a week	–	–	–	–	–	–	-1.31	0.80	-0.080	-2.65	1.29	-0.180*
More than once a week	–	–	–	–	–	–	-0.54	1.36	-0.017	-3.36	1.33	-0.210*
Spirituality[c]	-0.18	0.11	-0.080	0.06	0.11	0.026	–	–	–	–	–	–
Support from friends[d]	-0.11	0.13	-0.044	-0.23	0.10	-0.104***	-0.15	0.11	-0.061	-0.17	0.12	-0.070
Support from relatives[d]	-0.22	0.13	-0.081	-0.41	0.09	-0.193***	-0.36	0.11	-0.144**	-0.32	0.11	-0.137**
GHQ score at Wave 3	0.39	0.05	0.343***	0.26	0.04	0.259***	0.35	0.04	0.314***	0.30	0.05	0.287***
N	394			498			500			392		
R²	0.187			0.169			0.202			0.179		
F(df)	14.86***(6, 387)			16.75***(6, 491)			13.80***(9, 490)			9.28***(9, 382)		

Model 1 Regression analysis for those who rarely or never attend religious services, *Model 2* Regression analysis for those low on spirituality, *Model 3* Regression analysis for those attending religious services once a month or more, *Model 4* Regression analysis for those high on spirituality. Race and age were removed from these models as they were not associated with distress in the baseline models

*
$p < 0.05$,

**
$p < 0.01$,

***
$p < 0.001$

[a] Gender: 0 Male, 1 Female

[b] Negative events: 0 = No events, 1 = one or more events within past year

[c] Spirituality: lower score means greater importance of spirituality

[d] Support from friends or relatives: higher number means greater support