Published in final edited form as:

J Behav Med. 2015 April ; 38(2): 183–193. doi:10.1007/s10865-014-9593-2.

Intrinsic religiousness and well-being among cancer patients: the mediating role of control-related religious coping and self-efficacy for coping with cancer

John E. Pérez and

Department of Psychology, University of San Francisco, 2130 Fulton Street, San Francisco, CA 94117-1080, USA

Amy Rex Smith

Department of Nursing, University of Massachusetts Boston, Boston, MA, USA

Abstract

We examined the relationship between intrinsic religiousness and well-being, with control-related religious coping and self-efficacy for coping with cancer as potential mediators of this relationship among cancer patients. In a cross-sectional design, 179 ambulatory cancer patients completed measures of intrinsic religiousness, religious coping, self-efficacy for coping with cancer, well-being, and demographic variables. Type of cancer, stage of cancer, and time since diagnosis were collected from electronic medical charts. In a path model, the positive association between intrinsic religiousness and three types of well-being—physical, functional, and social—was fully mediated by active religious surrender and self-efficacy for coping with cancer. In addition, the negative association between passive religious deferral and all four types of well-being—physical, functional, social, and emotional—was fully mediated by self-efficacy for coping with cancer. Finally, there was a negative direct association between pleading for God's direct intercession and emotional well-being. These findings suggest pathways by which intrinsic religiousness and control-related religious coping are linked to various dimensions of well-being among cancer patients.

Keywords

Cancer; Intrinsic religiousness; Religious coping; Self-efficacy; Well-being

There is a growing body of research connecting religious factors to well-being among cancer patients (Kristeller et al., 2011; Thuné-Boyle et al., 2006); however, only recently have researchers begun to explore the mechanisms linking various religious factors to well-being. Identifying potential mechanisms has important implications for both basic and applied research. First, identifying mechanisms can help elucidate potential pathways by which

jperez6@usfca.edu.

Conflict of interest John E. Pérez and Amy Rex Smith declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from all patients included in the study.

specific religious factors impact various dimensions of well-being. Second, if such mechanisms are identified, they can be integrated into interventions to promote well-being and quality of life among cancer patients.

Intrinsic religiousness is the internalization of faith as the primary motive in people's lives; people high in intrinsic religiousness rely on religion to guide their day-to-day decisions (Allport & Ross, 1967). In contrast, extrinsic religiousness is the use of religion for a variety of personal needs such as security, status, or social support (Allport & Ross, 1967). Several authors have found that intrinsic religiousness is associated with better health and well-being in various populations (Byrd et al., 2007; Liu & Koenig, 2013; Masters & Knestel, 2011). Koenig et al. (1998) found that higher levels of intrinsic religiousness predicted faster remission from major depressive disorder among older hospitalized medical patients. Among cancer patients, intrinsic religiousness has been positively associated with hope, meaning, and peace; conversely, intrinsic religiousness has been negatively associated with depressive symptoms and other negative mood states (Caplan et al., 2013; Fehring et al., 1997; Nelson et al., 2009).

Some researchers have examined potential mechanisms linking intrinsic religiousness to well-being in non-clinical samples. For example, in a community sample of older British Christian adults, Hui and Coleman (2013) found that more blissful afterlife beliefs and greater ego integrity (i.e., positive attitudes toward aging, self-acceptance, and life purpose) mediated the relationship between intrinsic religiousness and lower death anxiety. In two studies with college and community samples, Steffen and Masters (2005) found that compassionate attitude mediated the relationship between intrinsic religiousness and several psychosocial variables, including lower perceived stress, lower levels of depressive symptoms, greater satisfaction with social support, and better marital functioning. Consistent with recent trends in the religion–health research literature, we seek to understand some of the cognitive and behavioral mechanisms linking intrinsic religiousness to well-being among cancer patients.

Religious coping styles are potential mediators of the relationship between intrinsic religiousness and well-being. Religious coping is defined as an individual's use of religion to understand and manage stressors (Pargament, 1997; Pargament et al., 2000). Several researchers have examined the link between different types of religious coping and well-being among cancer patients (Gall et al., 2009; Sherman et al., 2009; Thuné-Boyle et al., 2013). Although reviews of the literature suggest mixed findings among cancer patients (e.g., Thuné-Boyle et al., 2006), there appears to be support for an association between emotional distress and negative religious coping (Lavery & O'Hea, 2010) or turning to God without a strong spiritual foundation (Schreiber & Brockopp, 2012). For example, in a predominantly Christian sample of myeloma patients who received stem cell transplantation, negative religious coping at baseline predicted lower levels of emotional well-being as well as higher levels of anxiety symptoms, depressive symptoms, and transplant-related concerns following transplantation (Sherman et al., 2009).

Because many aspects of cancer can challenge an individual's sense of control, efforts to gain control using religious coping may be particularly salient to cancer patients. Pargament

et al. (2000) conceptualize active religious surrender as an individual's attempt to manage what is possible, and then relinquish remaining control to God. On the other hand, they describe passive religious deferral as submissively waiting for God to control the situation. Finally, Pargament et al. define pleading for direct intercession as seeking control indirectly by pleading to God for a miracle or divine intervention. Research with cancer populations indicates that active religious surrender is associated with well-being, whereas passive religious deferral and pleading for direct intervention are associated with more distress. For example, in a longitudinal study of women with breast cancer, deferring control to God predicted less active coping, which in turn predicted lower quality of life (McLaughlin et al., 2013). In another longitudinal study, female breast cancer patients who increased their use of active religious surrender from 1 to 6 months after surgery showed a decrease in emotional distress and an increase in emotional well-being; conversely, those female breast cancer patients who increased their use of pleading for direct intervention immediately prior to and up to 1 month post-surgery reported an increase in emotional distress (Gall et al., 2009). Although religious coping may be linked directly to health and well-being outcomes, this relationship may be further mediated by other psychosocial factors, such as self-efficacy for coping with cancer. Self-efficacy may be particularly salient in the link between control-related religious coping and well-being.

Social cognitive theory suggests that self-efficacy is an important intrapersonal resource for achieving goals and desired outcomes (Bandura, 2001). Self-efficacy for coping with cancer represents patients' confidence in their ability to use various strategies to manage major tasks during the course of their illness (Merluzzi et al., 2001). Self-efficacy for coping with cancer has been associated with positive health outcomes such as less fatigue, lower levels of depressive symptoms, and higher quality of life among cancer patients (Albrecht et al., 2013; Merluzzi et al., 2001; Philip et al., 2013). Howsepian and Merluzzi (2009) found that religious beliefs were unrelated to self-efficacy for coping with cancer and psychosocial adjustment to cancer in a predominantly Christian sample of cancer outpatients. On the other hand, Nairn and Merluzzi (2003) found that a deferring–collaborative religious coping factor was associated with greater psychosocial adjustment to cancer; this association was partially mediated by higher levels of self-efficacy for coping with cancer. The deferring–collaborative religious coping factor was a combination of passive religious deferral, where one gives up all control to God, and collaborative religious coping, where one works with God as partners to manage major life stressors. Taken together, these findings suggest that self-efficacy for coping with cancer may be an important link between religious coping—but not religious beliefs—and well-being among cancer patients.

Guided by both religious coping theory (Pargament, 1997; Pargament et al., 2000) and social cognitive theory (Bandura, 2001), the current study builds on previous research by focusing on potential mediators that link intrinsic religiousness to various domains of well-being among cancer patients. We hypothesized that intrinsic religiousness—mediated by control-related religious coping and self-efficacy for coping with cancer—would predict greater well-being. We predicted that intrinsic religiousness would have a positive association with active religious surrender, but have a negative association with passive religious deferral and pleading for direct intercession. Furthermore, we predicted that active religious surrender would have a positive association with self-efficacy for coping with cancer, whereas passive

religious deferral and pleading for direct intercession would have a negative association with self-efficacy for coping with cancer. Finally, we predicted that self-efficacy for coping with cancer would predict higher levels of well-being in all four domains—physical, functional, social, and emotional (see Fig. 1).

Method

Participants

Participants were 179 adult cancer outpatients at three northeastern U.S. hospitals organized as one comprehensive cancer center. Patients with stage II–stage IV cancers, as well as advanced cancers that were not staged (e.g., hematological malignancies), were eligible for the study. Patients had to be 18 years or older, be able to read English, and be in active outpatient treatment (e.g., radiation, chemotherapy, palliative care). We excluded patients with stage I cancers and/or those who were not in active treatment because we expected that early cancer stage and non-treatment status would have a significantly different impact on well-being (Weisman & Worden, 1976–77). Based on the exclusion criteria, 43 patients who expressed an interest in the study were not eligible to participate. In addition, 14 patients were initially contacted, but could not be reached for follow up; 26 patients who were mailed the questionnaire did not return it; and 14 patients declined to participate. Participants were predominantly White, Christian, and female with an average of 16 years of education. Demographic characteristics of the sample are presented in Table 1.

Measures

Demographic questionnaire—The demographic questionnaire included age, gender, racial/ethnic self-identification, religious affiliation, marital status, work status, years of education, and family income.

Medical chart review—Type of cancer, stage of cancer, and date of diagnosis were collected from electronic medical charts by the second author.

Intrinsic Religious Motivation Scale (IRM; Hoge, 1972)—This 10-item scale assesses the degree to which people internalize and live their faith as a master motive (e.g., My religious beliefs are really what lie behind my whole approach to life). Participants rated each item on a 4-point, Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The IRM has demonstrated good inter-item reliability (Kuder-Richardson Formula 20 = .90; Hoge, 1972) and good construct validity, correlating with other measures of intrinsic religiousness ($r = .71$ to $.87$; Bassett, 1999) and helping behavior ($r = .30$ to $.36$; Benson et al., 1980). For inter-item reliability coefficients (Cronbach's alpha) of the IRM scale and other variables in the current study, see Table 2.

Religious Coping (RCOPE; Pargament et al., 2000)—We assessed five religious coping scales (3 items per sub-scale) that assessed religious methods of coping to gain control in the context of major life stressors. Participants rated each item on a 4-point, Likert-type scale ranging from 0 (not at all) to 3 (a great deal). Because of high correlations among some of the religious coping variables (i.e., possible multicollinearity), we excluded

collaborative religious coping and self-directing religious coping. We included the following 3 religious coping styles in the analyses: Active Religious Surrender—an active sharing of control with God (e.g., Did my best and then turned the situation over to God), Passive Religious Deferral—passive waiting for God to control the situation (Didn't try much of anything; simply expected God to take control), and Pleading for Direct Intercession—seeking control indirectly by pleading to God for a miracle or divine intervention (Pleaded with God to make things turn out okay). The 5-item versions of these control-related RCOPE scales have shown good inter-item reliability (Cronbach's $\alpha = .83$ to $.92$) and good criterion-related validity in a college sample, demonstrating associations with stress-related growth, positive religious changes, and distress (Pargament et al., 2000). However, in a hospital sample, the 3-item version of Pleading for Direct Intercession had a somewhat low inter-item reliability coefficient (Cronbach's $\alpha = .66$; Pargament et al., 2000).

Cancer Behavior Inventory-brief version (CBI-B; Merluzzi et al., 1999)—This 14-item measure assesses self-efficacy for coping with cancer. The CBI-B measures four domains in which participants rate their confidence that they can perform these behaviors now or in the near future. The domains include maintaining independence and positive attitude, participating in medical care, coping and stress management, and managing affect. Participants rate each item on a 9-point Likert-type scale ranging from 1 (not at all confident) to 9 (totally confident). A 12-item version of the CBI-B demonstrated good inter-item reliability (Cronbach's $\alpha = .84$ to $.88$) and good criterion-related validity—positive correlations with measures of optimism ($r = .37$), quality of life ($r = .43$), and satisfaction with life ($r = .48$); negative correlations with measures of depression ($r = -.55$) and sickness impact ($r = -.38$) (Heitzmann et al., 2011).

Functional Assessment of Cancer Therapy: general, version 4 (FACT-G; Cella et al., 1993)—The FACT-G is a 27-item quality-of-life measure for patients receiving cancer treatment. The four dimensions include: Physical Well-Being (e.g., I have pain), Functional Well-Being (e.g., I am able to work), Social/Family Well-Being (e.g., I get emotional support from my family), and Emotional Well-Being (e.g., I feel sad). Participants rate each item on a 5-point, Likert-type scale ranging from 0 (not at all) to 4 (very much). Items that represent lower levels of well-being (e.g., I have pain) are reverse coded so that higher scores represent higher levels of well-being. The FACT-G scales have demonstrated adequate inter-item reliability (Cronbach's $\alpha = .69$ to $.82$) and good test–retest reliability ($r = .82$ to $.88$). In addition, the FACT-G has shown good construct and criterion-related validity—correlating with another measure of quality of life ($r = .79$), activity level ($r = -.56$), and emotional distress ($r = -.58$); furthermore, it has shown sensitivity to clinical change (Cella et al., 1993).

Procedure

Patients were recruited into the study from three northeastern hospitals by three methods: (1) brochures providing a brief overview and purpose of the study, eligibility criteria, and study team contact information were distributed in the waiting areas of the hospital cancer centers; (2) an introductory letter, signed by the primary oncologists, was mailed out or given to identified patients informing them of this study by a member of their healthcare team; (3)

previously screened, eligible outpatients were approached by a member of the study staff after being introduced to the patient by a member of their healthcare team.

Participants provided consent to participate in the study, including having their medical charts reviewed to obtain diagnostic staging of cancer and other health information. Patients who met eligibility criteria and were interested in participating were mailed two copies of the consent form and the study questionnaire along with a self-addressed, stamped envelope. Participants were asked to return the completed consent form and questionnaire within 1 week. If the questionnaire was not received after 2 weeks, a study staff member followed up by phone, mail, or e-mail, based on the participants' preferred method of correspondence. Participants received a \$25 gift card as compensation for their participation.

Data Analysis

Data were screened using IBM SPSS Statistics 20.0 to determine whether the variables met the assumptions of normality and linearity for path analysis. Based on examination of *z*-scores and histograms, two outliers were found for self-efficacy for coping with cancer and one outlier was found for months since diagnosis. These scores were changed to a value one unit more extreme than the next most extreme score in the distribution, i.e., windsored (Tabachnick & Fidell, 2013). In addition, the variable months since diagnosis was positively skewed; therefore, we applied a square root transformation. Subsequently, all variables met the assumptions of normality and linearity. Based on Mahalanobis distance and Cook's distance, there were no multivariate outliers among the predictor variables (Fox, 1991). With the exception of one covariate—total family income (10.6 % missing data)—there was less than 3 % missing data among the variables and the data were missing at random. Therefore, missing data were estimated using an expectation maximization method in PRELIS (Jöreskog & Sörbom, 1996).

The following variables were examined as potential covariates in the model: age, gender, race/ethnicity, education level, family income, months since diagnosis, and cancer stage. Of these, age, family income, and months since diagnosis were significantly associated with at least one of the outcome variables (i.e., FACT-G scales). Therefore, these variables were included as covariates in the model.

To examine the relationship among intrinsic religiousness, religious coping, self-efficacy for coping with cancer, and well-being, we analyzed the data using path analysis in the LISREL 8.72 program (Jöreskog & Sörbom, 1996). The path analysis began with the hypothesized model (see Fig. 1). *T*-values of each parameter were then examined to determine if certain paths could be dropped from the model in order to develop a more parsimonious model. In addition, modification indices were examined to determine if any fixed paths needed to be estimated. In the model fitting procedure, we added one parameter at a time based on theory and the size of the modification index. Chi square (χ^2) change, Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI) were then used to determine if the re-estimated model improved fit to the data (Jöreskog & Sörbom, 1996).

To avoid multicollinearity problems due to high correlations among some of the control-related religious coping variables (Tabachnick & Fidell, 2013), we excluded self-directing

religious coping and collaborative religious coping from the path analysis. Self-directing religious coping had a high, negative correlation with collaborative religious coping ($r = -.64$), active religious surrender ($r = -.66$), and intrinsic religiousness ($r = -.69$). Thus, self-directing religious coping could cause opposing mediation (i.e., indirect effects that work in the opposite direction of other indirect effects). In this case, it is possible that the sum of the indirect effects could be zero and “no effect” would be mediated (Kenny et al., 1998). In addition, collaborative religious coping correlated highly with active religious surrender ($r = .67$). We chose to retain active religious coping because it provided a good complement theoretically to passive religious deferral, and it had a lower correlation with pleading for direct intercession ($r = .40$) than did collaborative religious coping ($r = .48$).

Results

The hypothesized model

Figure 1 shows the hypothesized path model. According to the model, higher levels of intrinsic religiousness predict higher levels of four different types of well-being. The relationship between intrinsic religiousness and well-being is fully mediated by control-related religious coping and self-efficacy for coping with cancer. Specifically, higher levels of intrinsic religiousness lead to higher levels of active religious surrender and lower levels of both passive religious deferral and pleading for direct intercession. In turn, active religious surrender positively predicts self-efficacy for coping with cancer, whereas passive religious deferral and pleading for direct intercession negatively predict self-efficacy for coping with cancer. Finally, higher levels of self-efficacy for coping with cancer predict higher levels of the four different types of well-being. The covariates—age, family income, and months since diagnosis—are controlled in the analysis. Correlations, means, standard deviations, and inter-item reliability coefficients of the variables in the model are presented in Table 2.

Model estimation

The hypothesized model did not fit the data adequately, $\chi^2 (43, N = 179) = 156.25, p < .001$, RMSEA = .12, CFI = .82. Based on *t* tests, eight non-significant parameters were fixed: age $\rightarrow$ emotional well-being; age $\rightarrow$ functional well-being; intrinsic religiousness $\rightarrow$ passive religious deferral; pleading for direct intercession $\rightarrow$ self-efficacy for coping with cancer; and four correlations among the covariates and intrinsic religiousness. Based on theory and modification indices, seven additional paths were incrementally estimated, most of which allowed the covariates to predict the mediators (see Table 3). The only additional path between the predictors and outcomes was pleading for direct intercession $\rightarrow$ emotional well-being. The final model fit the data well, $\chi^2 (48, N = 179) = 73.44, p < .05$, RMSEA = .05, CFI = .96. The overall model explained 19 % of the variance in physical well-being, 48 % of the variance in functional well-being, 18 % of the variance in social well-being, and 37 % of the variance in emotional well-being.

During the course of model building, some suppression occurred. Of note, modification indices identified additional paths between age $\rightarrow$ pleading for direct intercession and intrinsic religiousness $\rightarrow$ emotional well-being. Estimating these parameters produced

significant suppression in the model. Specifically, the standardized path coefficients between intrinsic religiousness $\rightarrow$ pleading for direct intervention and pleading for direct intervention $\rightarrow$ emotional well-being significantly exceeded the zero-order correlations between these variables. Therefore, although estimating these parameters would have led to an improvement in the overall fit of the model, these parameters were not retained in the final model. Minor suppression occurred in some remaining parameters because some variables likely suppressed some of the unexplained variance in the dependent variables (Tabachnick & Fidell, 2013). Significant standardized path coefficients for the final model are presented in Fig. 2. For the sake of clarity, the standardized path coefficients between the covariates and other variables are not included in Fig. 2; rather, they are listed in Table 4.

Direct effects

Intrinsic religiousness predicted higher levels of active religious surrender ($\beta = .70, p < .001$) and higher levels of pleading for direct intercession ($\beta = .37, p < .001$). Active religious surrender predicted higher levels of self-efficacy for coping with cancer ($\beta = .37, p < .001$), whereas passive religious deferral predicted lower levels of self-efficacy for coping with cancer ($\beta = -.16, p < .001$). In addition, pleading for direct intercession predicted lower levels of emotional well-being ($\beta = -.30, p < .001$). Self-efficacy for coping with cancer predicted higher levels of all four types of well-being: physical well-being ($\beta = .36, p < .001$), functional well-being ($\beta = .42, p < .001$), social well-being ($\beta = .31, p < .001$), and emotional well-being ($\beta = .57, p < .001$). Finally, physical well-being predicted higher levels of functional well-being ($\beta = .35, p < .001$).

Indirect effects

Intrinsic religiousness had indirect effects on three types of well-being that were fully mediated by higher levels of active religious surrender and, in turn, higher levels of self-efficacy for coping with cancer: physical well-being (β for indirect effect = $.09, p < .001$), functional well-being (β for indirect effect = $.14, p < .001$), and social well-being (β for indirect effect = $.08, p < .01$). Active religious surrender, which was part of the chain of associations between intrinsic religiousness and well-being, had positive indirect effects on all four types of well-being: physical well-being (β for indirect effect = $.13, p < .001$), functional well-being (β for indirect effect = $.20, p < .001$), social well-being (β for indirect effect = $.12, p < .001$), and emotional well-being (β for indirect effect = $.21, p < .001$). Passive religious deferral, which was not predicted by intrinsic religiousness, had negative indirect effects on all four types of well-being that were fully mediated by self-efficacy for coping with cancer: physical well-being (β for indirect effect = $-.06, p < .05$), functional well-being (β for indirect effect = $-.08, p < .05$), social well-being (β for indirect effect = $-.05, p < .05$), and emotional well-being (β for indirect effect = $-.09, p < .05$). In addition to a direct effect, self-efficacy for coping with cancer had an indirect effect on functional well-being (β for indirect effect = $.13, p < .001$).

Discussion

We found support for our model depicting a mediated relationship between intrinsic religiousness and well-being among cancer patients. Active religious surrender and self-

efficacy for coping with cancer were key mechanisms in the link between intrinsic religiousness and three types of well-being—physical, functional, and social. Contrary to our hypothesized model, there was a direct, negative link between pleading for direct intercession and emotional well-being. Surprisingly, intrinsic religiousness had a positive association with pleading for direct intercession. We anticipated that cancer patients high in intrinsic religiousness would engage in less pleading or bargaining with God for a miracle or divine intervention. Moreover, we found that pleading for direct intercession was positively associated with active religious surrender. This may be a unique pattern of findings among cancer patients. Intrinsically religious cancer patients may primarily cope with their stress by actively sharing control with God and, to a lesser degree, pleading for God to cure them of their illness. However, while active religious surrender was associated with greater well-being, pleading for direct intercession was associated with less well-being. This latter finding is consistent with a national survey of 2,262 cancer survivors in the United States; sixty-nine percent of respondents reported praying for their own health, which was inversely associated with good or better self-reported physical health (Ross et al., 2008).

Among the outcome variables, the most variance (48 %) was explained in functional well-being. This can be explained, to some degree, by this variable being directly predicted by physical well-being. However, there was still a significant amount of variance in functional well-being explained by other factors in the model. The chain of intrinsic religiousness → active religious surrender → self-efficacy for coping with cancer explained much of the variance in functional well-being—a variable that taps strongly into life satisfaction and fulfillment. In addition, the second greatest amount of variance (37 %) was explained in emotional well-being. This finding is consistent with other studies where intrinsic religiousness (Caplan et al., 2013; Fehring et al., 1997; Nelson et al., 2009), religious coping (Gall et al., 2009; Sherman et al., 2009), and self-efficacy for coping with cancer (Albrecht et al., 2013; Merluzzi et al., 2001; Philip et al., 2013) predicted mental health among cancer patients. Overall, it is noteworthy that the model predicted significant variance in all four types of well-being.

A unique contribution of this study is the examination of potential mechanisms linking intrinsic religiousness to various types of well-being among cancer patients. Several studies suggest a direct link between religious coping and well-being (Gall et al., 2009; Pargament et al., 2000; Sherman et al., 2009). In our study, self-efficacy for coping with cancer further mediated the relationship between religious coping and well-being, strongly predicting all four types of well-being. Cancer patients who are intrinsically motivated by their religious faith are more likely to share control with God to cope with life stressors. In turn, active sharing of control with God is more likely to be associated with a sense of personal agency for coping with cancer illness. Subsequently, greater self-efficacy for coping with cancer predicts greater well-being for cancer patients, a finding consistent with other studies (Albrecht et al., 2013; Merluzzi et al., 2001; Philip et al., 2013). On the other hand, passively waiting for God to control the situation logically predicts less self-efficacy for coping with cancer and, consequently, less well-being (Gall et al., 2009).

Our results differed somewhat from previous findings on the link between religious factors, self-efficacy, and well-being among cancer patients. Howsepian and Merluzzi (2009) found

that religious beliefs were unrelated to self-efficacy for coping with cancer and psychosocial adjustment to cancer. In contrast, we found that intrinsic religiousness—a motivational construct rather than a measure of beliefs—was indirectly related to four types of well-being via active religious surrender and self-efficacy for coping with cancer. Nairn and Merluzzi (2003) found that a combined deferring–collaborative religious coping factor was associated with greater psychosocial adjustment to cancer; this association was partially mediated by higher levels of self-efficacy for coping with cancer. However, deferring–collaborative religious coping was not associated with quality of life as measured by the FACT-G, the same outcome measure used in our study. In contrast, we examined active religious surrender—a coping style highly correlated with collaborative religious coping—and passive religious deferral as separate constructs in the model. Importantly, although these constructs had a non-significant positive correlation ($r = .14$), they had opposite associations with self-efficacy for coping with cancer and well-being. Namely, active religious surrender was positively associated with self-efficacy and well-being, whereas passive religious deferral was negatively associated with self-efficacy and well-being. These differences highlight the need to examine these religious coping constructs separately and for more research on mechanisms that link religious factors to well-being among cancer patients. Identifying these mechanisms is critical work that is essential to the development of helpful interventions for these patients.

There were some limitations to this study. Similar to the research mentioned above (Howsepan & Merluzzi, 2009; Nairn & Merluzzi, 2003), participants in this study were a non-random, clinical sample of predominantly White, Christian (41 % Catholic, 31 % Protestant), female, and well-educated cancer patients. Consequently, we are unable to generalize the results of this study to populations that differ by race, gender, socioeconomic status, and religious affiliation. In addition, one of the religious coping variables—passive religious deferral—had a low inter-item reliability coefficient (see Pargament et al., 2000), which may have attenuated its relationship with other variables in the model. Moreover, conclusions that can be drawn from this investigation are limited due to the cross-sectional design. Reverse causality or other unidentified and unmeasured variables might explain the findings. For example, dispositional variables such as optimism may influence an individual's level of self-efficacy for coping with cancer. Finally, path modeling as a data analytic tool has its own limitations. Our analyses can only demonstrate whether the hypothesized models fit the data well; alternative models may also fit the data well.

Despite these limitations, this study had some noteworthy strengths. We used theory to guide our model and a powerful statistical technique to analyze the data. Path analysis allowed us to examine multiple direct and indirect relationships simultaneously, while controlling for the influence of potential confounding variables. As mentioned above, few researchers have examined potential mechanisms linking intrinsic religiousness or religious coping with well-being among cancer patients. Moreover, we included a multidimensional measure of well-being, which allowed us to examine the relative association between religious factors and four different types of well-being.

Identifying potential mechanisms in the link between religious factors and well-being can inform future randomized, controlled intervention studies. For example, psychosocial

interventions aimed at improving the well-being of religious cancer patients could promote an active sharing of control with one's higher power. Chaplains and ministers could use scripture or other religious themes to motivate cancer patients to both take care of themselves and share their burden with their higher power (Allen et al., 2013). For non-religious cancer patients, psychosocial interventions could focus on promoting self-efficacy for coping with cancer through motivational interviewing (Miller & Rollnick, 2013). Longitudinal designs would help establish the temporal sequence of the variables, ruling out the possibility of reverse causality. Randomized, controlled intervention trials would help establish whether specific types of religious coping and other religious factors are causally related to well-being among cancer patients and other populations with chronic illness.

It has long been recognized that religion plays an important role in the lives of ethnic minorities in the United States. A growing body of research suggests that religious factors play an important role in both cancer-screening behaviors and coping with cancer illness among people of color (Allen et al., 2013; Holt et al., 2011; Umezawa et al., 2012). Future studies are needed that focus on different psychosocial mechanisms that link specific religious constructs and well-being among cancer patients (e.g., Park et al., 2009; Pérez et al., 2011), especially among culturally diverse populations that experience health disparities.

Acknowledgments

This study was funded by a National Cancer Institute U56 Comprehensive Cancer Partnership Program Grant (U56 CA118635). We gratefully acknowledge the contributions of Sarah Ahmad, Esteban Barreto, Katia Canenguez, Susan DeCristofaro, Rebecca Norris, Laurel Radwin, Geraldine Sanon, Max Stewart, Elizabeth Tracey, and the participants in this research. We especially thank Karen Emmons and Adán Colón-Carmona for their excellent leadership and support of the institutional partnership.

References

- Albrecht K, Droll H, Giesler JM, Nashan D, Meiss F, Reuter K. Self-efficacy for coping with cancer in melanoma patients: Its association with physical fatigue and depression. *Psycho-Oncology*. 2013; 22:1972–1978. doi:10.1002/pon. 3238. [PubMed: 23288588]
- Allen JD, Pérez JE, Tom L, Leyva B, Diaz D, Torres MI. A pilot test of a church-based intervention to promote multiple cancer-screening behaviors among Latinas. *Journal of Cancer Education* (Advance online publication). 2013 doi: 10.1007/s13187-013-0560-3.
- Allport GW, Ross JM. Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*. 1967; 5:432–443. doi:10.1037/h0021212. [PubMed: 6051769]
- Bandura A. Social cognitive theory: An agentic perspective. *Annual Review of Psychology*. 2001; 52:1–26. doi:10.1146/annurev.psych.52.1.1.
- Bassett RL. Intrinsic Religious Motivation Scale.. In: Hill PC, Hood RW, Jr, editors *Measures of religiosity*. Religious Education Press; Birmingham, AL: 1999. 135–137.
- Benson PL, Dehority J, Garman L, Hanson E, Hochschwender M, Lebold C, et al. Intrapersonal correlates of non-spontaneous helping behavior. *Journal of Social Psychology*. 1980; 110:87–95. doi:10.1080/00224545.1980.9924226.
- Byrd KR, Hageman A, Isle DB. Intrinsic motivation and subjective well-being: The unique contribution of intrinsic religiousness. *International Journal for the Psychology of Religion*. 2007; 17:141–156. doi:10.1080/10508610701244155.
- Caplan LS, Sawyer P, Holt C, Allman RM. Religiosity and function among community-dwelling older adult survivors of cancer. *Journal of Religion, Spirituality & Aging*. 2013; 25:311–325. doi: 10.1080/15528030.2013.787575.

- Cella DF, Tulsky DS, Gray G, Sarafian B, Linn E, Bonomi A, et al. The Functional Assessment of Cancer Therapy Scale: Development and validation of the general measure. *Journal of Clinical Oncology*. 1993; 11:570–579. [PubMed: 8445433]
- Fehring RJ, Miller JF, Shaw C. Spiritual well-being, religiosity, hope, depression, and other mood states in elderly people coping with cancer. *Oncology Nursing Forum*. 1997; 24:663–671. [PubMed: 9159782]
- Fox J. *Regression diagnostics*. Sage Publications; Newbury Park, CA: 1991.
- Gall TL, Guirguis-Younger M, Florack P. The trajectory of religious coping across time in response to the diagnosis of breast cancer. *Psycho-Oncology*. 2009; 18:1165–1178. doi:10.1002/pon.1495. [PubMed: 19214984]
- Heitzmann CA, Merluzzi TV, Jean-Pierre P, Roscoe JA, Kirsh KL, Passik SD. Assessing self-efficacy for coping with cancer: Development and psychometric analysis of the brief version of the Cancer Behavior Inventory (CBI-B). *Psycho-Oncology*. 2011; 20:302–312. doi:10.1002/pon.1735. [PubMed: 20878830]
- Hoge DR. A validated intrinsic religiousness scale. *Journal for the Scientific Study of Religion*. 1972; 11:369–376. doi:10.2307/1384677.
- Holt CL, Wang MQ, Caplan L, Schulz E, Blake V, Southward VL. Role of religious involvement and spirituality in functioning among African Americans with cancer: Testing a meditational model. *Journal of Behavioral Medicine*. 2011; 34:437–448. doi:10.1007/s10865-010-9310-8. [PubMed: 21222026]
- Howsepian BA, Merluzzi TV. Religious beliefs, social support, self-efficacy and adjustment to cancer. *Psycho-Oncology*. 2009; 18:1069–1079. doi:10.1002/pon.1442. [PubMed: 19189320]
- Hu L-T, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*. 1999; 6:1–55. doi:10.1080/10705519909540118.
- Hui VK-Y, Coleman PG. Afterlife beliefs and ego integrity as two mediators of the relationship between intrinsic religiosity and personal death anxiety among older adult British Christians. *Research on Aging*. 2013; 35:144–162. doi:10.1177/0164027512436429.
- Jöreskog K, Sörbom D. *LISREL 8: User's reference guide*. Scientific Software International; Chicago, IL: 1996.
- Kenny DA, Kashy DA, Bolger N. Data analysis in social psychology.. In: Gilbert D, Fiske S, Lindzey G, editors *The handbook of social psychology*. 4th ed.. Vol. 1. McGraw-Hill; Boston, MA: 1998. 233–265.
- Koenig HG, George LK, Peterson BL. Religiosity and remission of depression in medically ill older patients. *American Journal of Psychiatry*. 1998; 155:536–542. [PubMed: 9546001]
- Kristeller JL, Sheets V, Johnson T, Frank B. Understanding religious and spiritual influences on adjustment to cancer: Individual patterns and differences. *Journal of Behavioral Medicine*. 2011; 34:550–561. doi:10.1007/s10865-011-9335-7. [PubMed: 21442244]
- Liu EY, Koenig HG. Measuring intrinsic religiosity: Scales for use in mental health studies in China—A research report. *Mental Health, Religion & Culture*. 2013; 16:215–224. doi:10.1080/13674676.2012.672404.
- Masters KS, Knestel A. Religious orientation among a random sample of community-dwelling adults: Relations with health status and health-relevant behaviors. *International Journal for the Psychology of Religion*. 2011; 21:63–76. doi:10.1080/10508619.2011.532450.
- McLaughlin B, Yoo W, D'Angelo J, Tsang S, Shaw B, Shah D, et al. It is out of my hands: How deferring control to God can decrease quality of life for breast cancer patients. *Psycho-Oncology*. 2013; 22:2747–2754. doi:10.1002/pon.3356. [PubMed: 23913722]
- Merluzzi TV, Nairn RC, Hegde K, Martinez Sanchez MA. Self-efficacy for coping with cancer: Revision of the Cancer Behavior Inventory (Version 2.0). *Psycho-Oncology*. 2001; 10:206–217. doi:10.1002/pon.511. [PubMed: 11351373]
- Merluzzi TV, Nairn RC, Martinez Sanchez MA. *A manual for the Cancer Behavior Inventory: A measure of self-efficacy for coping with cancer (Version 2.0)*. University of Notre Dame, Department of Psychology; Notre Dame, IN: 1999.

- Miller WR, Rollnick S. Motivational interviewing: Helping people change. 3rd ed.. Guilford Press; New York: 2013.
- Nairn RC, Merluzzi TV. The role of religious coping in adjustment to cancer. *Psycho-Oncology*. 2003; 12:428–441. doi:10.1002/pon.654. [PubMed: 12833556]
- Nelson C, Jacobson CM, Weinberger MI, Bhaskaran V, Rosenfeld B, Breitbart W, et al. The role of spirituality in the relationship between religiosity and depression in prostate cancer patients. *Annals of Behavioral Medicine*. 2009; 38:105–114. doi:10.1007/s12160-009-9139-y. [PubMed: 19806413]
- Pargament KI. The psychology of religion and coping: Theory, research, practice. Guilford Press; New York: 1997.
- Pargament KI, Koenig HG, Perez LM. The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology*. 2000; 56:519–543. doi:10.1002/(SICI)1097-4679(200004)56:4<519:AID-JCLP6>3.0.CO;2-1. [PubMed: 10775045]
- Park CL, Edmondson D, Hale-Smith A, Blank TO. Religiousness/spirituality and health behaviors in younger adult cancer survivors: Does faith promote a healthier lifestyle? *Journal of Behavioral Medicine*. 2009; 32:582–591. doi:10.1007/s10865-009-9223-6. [PubMed: 19639404]
- Pérez JE, Rex Smith A, Norris RL, Canenguez KM, Tracey EF, DeCristofaro SB. Types of prayer and depressive symptoms among cancer patients: The mediating role of rumination and social support. *Journal of Behavioral Medicine*. 2011; 34:519–530. doi:10.1007/s10865-011-9333-9. [PubMed: 21487725]
- Philip EJ, Merluzzi TV, Zhang Z, Heitzmann CA. Depression and cancer survivorship: Importance of coping self-efficacy in post-treatment survivors. *Psycho-Oncology*. 2013; 22:987–994. doi:10.1002/pon.3088. [PubMed: 22573371]
- Ross LE, Hall IJ, Fairley TL, Taylor YJ, Howard DL. Prayer and self-reported health among cancer survivors in the United States, National Health Interview Survey, 2002. *Journal of Alternative and Complementary Medicine*. 2008; 14:931–938. doi:10.1089/acm.2007.0788. [PubMed: 18925865]
- Schreiber JA, Brockopp DY. Twenty-five years later—what do we know about religion/spirituality and psychological well-being among breast cancer survivors? A systematic review. *Journal of Cancer Survivorship*. 2012; 6:82–94. doi:10.1007/s11764-011-0193-7. [PubMed: 22198806]
- Sherman AC, Plante TG, Simonton S, Latif U, Anaissie EJ. Prospective study of religious coping among patients undergoing autologous stem cell transplantation. *Journal of Behavioral Medicine*. 2009; 32:118–128. doi:10.1007/s10865-008-9179-y. [PubMed: 18855130]
- Steffen PR, Masters KS. Does compassion mediate the intrinsic religion–health relationship? *Annals of Behavioral Medicine*. 2005; 30:217–224. doi:10.1207/s15324796abm3003_6. [PubMed: 16336073]
- Tabachnick BG, Fidell LS. Using multivariate statistics. 6th ed.. Pearson Education Inc.; Boston, MA: 2013.
- Thuné-Boyle ICV, Stygall J, Keshtgar MRS, Davidson TI, Newman SP. Religious/spiritual coping resources and their relationship with adjustment in patients newly diagnosed with breast cancer in the UK. *Psycho-Oncology*. 2013; 22:646–658. doi:10.1002/pon.3048. [PubMed: 22331653]
- Thuné-Boyle IC, Stygall JA, Keshtgar MR, Newman SP. Do religious/spiritual coping strategies affect illness adjustment in patients with cancer? A systematic review of the literature. *Social Science and Medicine*. 2006; 63:151–164. doi:10.1016/j.socscimed.2005.11.055. [PubMed: 16427173]
- Umezawa Y, Lu Q, You J, Kagawa-Singer M, Leake B, Maly RC. Belief in divine control, coping, and race/ethnicity among older women with breast cancer. *Annals of Behavioral Medicine*. 2012; 44:21–32. doi:10.1007/s12160-012-9358-5. [PubMed: 22529040]
- Weisman AD, Worden JW. The existential plight of cancer: Significance of the first 100 days. *International Journal of Psychiatry in Medicine*. 1976–77; 7:1–15. doi:10.2190/UQ2GUGV1-3PPC-6387. [PubMed: 1052080]

Fig. 1.

Hypothesized model of the mediated relationship between intrinsic religiousness and well-being. *Note.* For the sake of clarity, covariates (i.e., age, family income, and months since diagnosis) are not depicted in the model above (see Table 4). Direct paths are designated by *single-headed arrows*. Error variances in the endogenous variables are represented by *small circles*

Fig. 2.

Final model of the mediated relationship between intrinsic religiousness and well-being.

Note. All final path coefficients were significant ($p < .01$). The *double-headed arrow* between Active Religious Surrender and Pleading for Direct Intercession represents a correlation (ψ)

Table 1

Demographic characteristics of the sample (N = 179)

Variable	<i>n</i>	Mean (SD) or percent ^a
Age	176	54.2 (12.9)
Months since diagnosis	176	42.5 (50.0)
Years of education	179	16.2 (2.6)
Gender		
Female	130	72.6 %
Male	49	27.4 %
Race/ethnicity		
Alaskan Native/Native American	1	0.6 %
Asian/Asian American/Pacific Islander	2	1.1 %
Black or African American	4	2.2 %
Latino/Hispanic	2	1.1 %
White or European American	168	93.9 %
Multiracial	2	1.1 %
Marital status		
Married/living as married	121	68.4 %
Single/never married	22	12.4 %
Divorced/separated	28	15.8 %
Widowed	6	3.4 %
Religious affiliation		
Christian–Catholic	73	41.2 %
Christian–Protestant	54	30.5 %
Christian–non-denominational	18	10.2 %
Jewish	9	5.1 %
Other	9	5.1 %
No affiliation/agnostic/atheist	14	7.9 %
Household income		
Less than \$25,000	17	10.6 %
\$25,000–\$49,999	30	18.8 %
\$50,000–\$74,999	41	25.6 %
\$75,000–\$99,999	20	12.5 %
\$100,000 and above	52	32.5 %
Work status		
Full time	39	22.2 %
Part time	26	14.8 %
Medical leave	36	20.5 %
Homemaker	11	6.3 %
Unemployed/looking for work	10	5.7 %
Retired	54	30.7 %
Type of cancer		

Variable	<i>n</i>	Mean (SD) or percent ^a
Breast	51	29.1 %
Gastrointestinal	26	14.9 %
Blood and lymphatic	23	13.1 %
Lung	20	11.4%
Gynecologic	18	10.3 %
Head and neck	10	5.7 %
Brain	9	5.1 %
Prostate	5	2.9 %
Skin, muscle, and bone	5	2.9 %
Other	5	2.9 %
Multiple	3	1.7 %
Stage of cancer		
II	26	15.2 %
III	39	22.8 %
IV	78	45.6 %
Non-staged	28	16.4 %

^aPercent is based on valid (non-missing) answers

Table 2
Pearson correlation coefficients, means, standard deviations, and inter-item reliability coefficients of variables in the path model

	Age	Family income	Months since diagnosis	Intrinsic religiousness	Active religious surrender	Passive religious deferral	Pleading for direct intercession
Family income	-.09						
Months since diagnosis	.16*	-.01					
Intrinsic religiousness	.23**	-.13	.12				
Active religious surrender	.19*	-.13	.21**	.72***			
Passive religious deferral	.19*	-.20**	.05	.11	.14		
Pleading for direct intercession	-.12	-.05	-.09	.37***	.40***	.14	
Self-efficacy	.09	.16*	.06	.25**	.33***	-.14	-.04
Physical well-being	.26***	.15*	.05	.11	.10	-.08	-.10
Functional well-being	.16*	.23**	.22**	.15*	.27***	-.10	-.02
Social well-being	.23**	.19*	-.04	.20**	.26***	-.09	.03
Emotional well-being	.15*	.08	.14	.16*	.18*	.01	-.28***
Mean	54.18	7.14	5.49	29.33	5.69	.69	2.86
SD	12.76	1.74	3.53	6.89	3.04	1.29	2.55
Cronbach's α	—	—	—	.89	.87	.56	.68

	Self-efficacy	Physical well-being	Functional well-being	Social well-being	Emotional well-being
Physical Well-being	.38***				
Functional Well-being	.57***	.53***			
Social Well-being	.36***	.21**	.37***		
Emotional Well-being	.54***	.38***	.45***	.32***	
Mean	94.80	18.27	18.10	22.05	16.87
SD	14.90	6.01	5.36	4.33	4.50
Cronbach's α	.82	.86	.78	.74	.80

The square root of months since diagnosis is reported in the table above

100' > *d*

10' > *d*
**
50' > *d*
*

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Fit indices for sequence of changes in the model based on theory and modification indices

Estimated model and changes	χ^2	<i>df</i>	<i>p</i>	χ^2	<i>df</i>	<i>p</i>	RMSEA	CFI
Model 1: Hypothesized path model	156.25	43	<.001	–	–	–	.12	.82
Model 2: Trimmed 8 non-significant paths (4 phis, 2 gammas, and 1 beta)	164.60	55	<.001	8.35	12	>.25	.10	.83
Model 3: Added beta path from pleading for direct intercession to emotional well-being	140.55	54	<.001	24.05	1	<.001	.09	.86
Model 4: Added beta path from physical well-being to functional well-being	107.88	53	<.001	32.67	1	<.001	.07	.91
Model 5: Added gamma path from family income to passive religious deferral	100.32	52	<.001	7.56	1	<.01	.07	.92
Model 6: Added gamma path from age to passive religious deferral	94.73	51	<.001	5.59	1	<.05	.07	.93
Model 7: Added gamma path from family income to self-efficacy for coping with cancer	88.21	50	<.001	6.52	1	<.05	.06	.94
Model 8: Added gamma path from months since diagnosis to active religious coping	82.94	49	<.01	5.27	1	<.05	.06	.95
Model 9: Added psi path (correlation) between active religious surrender and pleading for direct intercession	73.44	48	<.05	9.50	1	<.01	.05	.96

χ^2 , Chi square; *df*, degrees of freedom; –, change; *p*, significance level; χ^2 = Chi square difference test (i.e., subtraction of Chi square of modified model from previous model); the column to the right of χ^2 , indicates the significance (*p* value) of the Chi square difference test. RMSEAs below .06 and CFIs .95 and above indicate a good-fitting model (Hu & Bentler, 1999)

Table 4

Standardized parameter coefficients of covariates regressed on predictor and outcome variables in the path model

	Age	Family income	Months since diagnosis
Active religious surrender			.14 [*]
Passive religious deferral	.17 [*]	-.19 [*]	
Self-efficacy for coping with cancer		.18 [*]	
Physical well-being	.23 ^{**}		
Functional well-being		.11 [*]	.18 [*]
Social well-being	.21 ^{**}	.16 [*]	

^{*}
 $p < .05$

^{**}
 $p < .01$