Spiritual Coping and Adjustment in Adolescents With Chronic Illness: A 2-Year Prospective Study

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Received October 9, 2013; revisions received February 14, 2014; accepted February 17, 2014

Objective Examine longitudinal relationships between spiritual coping and psychological adjustment among adolescents with chronic illness. Methods Adolescents (N = 128; M = 14.7 years) with cystic fibrosis or diabetes completed measures of spiritual coping and adjustment at 2 time points ~2 years apart; parents also reported on adolescent adjustment. Prospective relationships between spiritual coping and adjustment were evaluated with an autoregressive cross-lagged path model. Results Positive spiritual coping predicted fewer symptoms of depression and less negative spiritual coping over time, whereas negative spiritual coping predicted more positive spiritual coping. Depressive symptoms predicted higher levels of negative spiritual coping and conduct problems over time. The results did not vary by disease. Conclusions Positive spiritual coping may buffer adolescent patients from developing depression and maladaptive coping strategies. Results also highlight the harmful role of depression in subsequent behavior difficulties and maladaptive coping. Addressing spiritual beliefs and depressive symptoms in pediatric medical care is warranted.

Key words adolescents; pediatric chronic illness; psychological adjustment; religious coping; spiritual coping.

Introduction

Over 30% of U.S. adolescents experience chronic health conditions that limit their daily activities or result in disability (Newacheck et al., 1998). Illness symptoms and demands of treatment also complicate their achievement of important developmental tasks such as increasing independence, establishing meaningful peer relationships, and transitioning into adult roles (Bauman, Drotar, Leventhal, Perrin, & Pless, 1997). In turn, these adolescents are at greater risk than their healthy counterparts for developing internalizing and externalizing problems that compromise their health over time (e.g. via treatment nonadherence) (Pinquart & Shen, 2011; Quittner et al., 2008). Worsened health outcomes are further compounded by the adverse effects of puberty on the course of some chronic diseases (Moran et al., 2002), highlighting the need to identify effective coping strategies for these adolescents.

A growing body of research has identified religious/spiritual coping as a salient issue for adolescents experiencing a variety of chronic health conditions (Cotton, Grossoehme, et al., 2009; Shelton, Linfield, Carter, & Morton, 2005). With normative developments in abstract thinking and moral reasoning (Fowler, 1981; Piaget, 1964), issues of spirituality rise to the forefront for most adolescents but become particularly important for those with chronic illness. With an emphasis on the sacred, spiritual beliefs can provide a unique framework for understanding and coping with illness (Pargament, 2011), particularly when other sources of support are not readily available (e.g., decreased social support during hospitalization) (Park, 2007).
Consistent with theory and empirical research on spiritual coping in adults (Pargament, Smith, Koenig, & Perez, 1998), youth with chronic illness use spiritual coping strategies (Cotton, Grossoehme, & McGrady, 2012; Pendleton, Cavalli, Pargament, & Nasr, 2002), and these strategies are strongly related to their behavioral and emotional functioning. Specifically, positive spiritual coping involves cognitive strategies such as seeking comfort and strength from God or believing that God is strengthening the individual in the situation. Positive spiritual coping is associated with lower emotional distress in youth with asthma, cystic fibrosis, and diabetes (Reynolds, Guion, & Mrug, 2013; Shelton et al., 2005). However, not all spiritual cognitions are helpful (Pargament et al., 1998). Some individuals also experience negative spiritual coping, including spiritual doubts or thoughts of being abandoned or punished by God. Negative spiritual coping predicts poorer quality of life and more emotional and behavioral problems in pediatric populations (Benore, Pargament, & Pendleton, 2008; Reynolds et al., 2013). Even after accounting for general coping, attribution style, disease severity, and other covariates, spiritual coping remains a significant predictor of mental health among children (Benore et al., 2008) and adults (Pargament et al., 1998; Tix & Frazer, 1998) and is more strongly linked to the emotional well-being of youth with chronic illness compared with healthy peers (Cotton, Kudel, et al., 2009). The use of positive and negative spiritual coping dimensions is either positively correlated (Benore et al., 2008; Pargament et al., 1998) or unrelated (Reynolds et al., 2013), suggesting that patients may use both, either, or neither dimension of spiritual coping.

Although existing literature provides strong evidence for the association between spiritual coping and psychological adjustment of pediatric patients, little is known about the dynamic relationships between these variables over time. Most studies on this topic have been cross-sectional, and the few prospective investigations have only examined spiritual coping as a predictor of adjustment outcomes over short periods (Benore et al., 2008; Lyon et al., 2011) or been limited in study scope and measurement (Pirutinsky, Rosmarin, Pargament, & Midlarsky, 2011). Yet the relationships between spiritual coping and adjustment are likely to be bidirectional. For instance, more depressive symptoms and conduct problems may promote increased use of negative spiritual coping and lower reliance on positive spiritual coping. It has been theorized that spiritual coping strategies may be mobilized in difficult situations (Pargament et al., 1998) and distress may lead to spiritual struggle (Pargament, 2009). It is also unknown whether positive and negative spiritual coping affect each other over time.

Furthermore, disease differences in these relationships have not been explored. For instance, the longitudinal relationship between spiritual coping and mental health may be different for youth facing a progressive severe disease such as cystic fibrosis compared with youth with a chronic condition such as diabetes, which, if controlled well, is typically less disabling. Spiritual coping may be more salient and play a more important role in the adjustment of adolescents with more severe medical conditions, paralleling the differences between chronically ill and healthy youth (Cotton, Kudel, et al., 2009). Better understanding of the temporal relationships between spiritual coping and adjustment across different medical conditions will provide pediatric psychologists and other health care providers better insight into how to intervene to improve coping and adjustment of adolescent patients.

Thus, the present study evaluates the prospective relationships among positive and negative spiritual coping, depressive symptoms, and conduct problems across two time points and explores whether these relationships vary between patients with cystic fibrosis and those with diabetes. We hypothesize that higher levels of positive spiritual coping will predict less depression and fewer conduct problems over time, whereas more negative spiritual coping will predict poorer emotional and behavioral adjustment. We also expect reciprocal effects—that better emotional and behavioral adjustment will predict the use of more positive and less negative spiritual coping over time. Because cystic fibrosis is generally more severe and progressive than diabetes, we anticipate stronger links from spiritual coping to adjustment for this group.

Method

Participants

Participants included 128 adolescents diagnosed with type 1 diabetes (n = 82) or cystic fibrosis (n = 46) and their caregivers. Adolescents (M = 14.7 years, SD = 1.8) included 53% males and 83% Caucasians, 13% African Americans, and 4% other ethnicities. Eighty-seven of the original families (68%; diabetes, n = 48; cystic fibrosis, n = 39) completed the follow-up assessment ~2 years after baseline (M = 1.78 years since baseline, SD = 0.80). Of these adolescents, 11% identified themselves as having no religious affiliation, 78% identified as Protestant, 8% as Catholic, and 3% as other. A summary of demographic characteristics of the sample is provided in Table I. Participants lost to follow-up were more likely to have diabetes than cystic fibrosis (p < .01), but they did not differ on any other variables used in the study, including gender (p = .52), ethnicity (p = .96), age (p = .25), income
Table I. Descriptive Statistics and Correlations of All Variables

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<th>Variables</th>
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<td>3 Cystic fibrosis</td>
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<td>6 Positive spiritual coping</td>
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<td>8 Depression (A)</td>
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<td>9 Conduct problems (P)</td>
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<td>10 Age</td>
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<td>11 Positive spiritual coping</td>
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<td>13 Depression (A)</td>
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<td>14 Conduct problems (P)</td>
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Note: *p < .05, **p < .01 or lower. Significant correlations are in bold. (A) = adolescent self-report of behavior on BASC; (P) = parent report of adolescent behavior on BASC.

(p = .66), positive spiritual coping (p = .27), negative spiritual coping (p = .99), depression (p = .98), and conduct problems (p = .40).

**Procedure**

All study procedures were approved by the university’s institutional review board. During 2008–2009, adolescents were recruited during outpatient medical visits at the diabetes and cystic fibrosis clinics at a children’s hospital in the southeast United States. Inclusion criteria included fluency in English and no known diagnosis of a pervasive developmental disorder, intellectual disability, or psychosis. Eligible adolescents aged 12–18 years and one primary caregiver were recruited to participate. After providing written parental informed consent and child assent, participants completed a packet of surveys during their visit or mailed it in after completion at home. Both written and verbal instructions for all measures were provided during recruitment. During 2009–2012, participants were recruited for a follow-up assessment by telephone and mail. Families were either mailed the survey with a stamped and addressed return envelope that they returned by mail. Families were either mailed the survey with a stamped and addressed return envelope that they returned by mail. Participants who did not complete the assessment could not be located (n = 20), declined to participate (n = 7), passed away (n = 1), or never returned the surveys after multiple reminders (n = 13). After each assessment, participants were compensated for their time.

**Measures**

**Demographics and Disease Characteristics**

At baseline, caregivers reported demographic information such as the child’s age, gender, and ethnicity. Ethnicity was recoded into two categories, Caucasian and racial/ethnic minority. Caregivers also reported on the family’s annual income using a scale that ranged from 1 (≤$10,000) to 11 (>=$100,000). At follow-up, participants were asked about their religious affiliation.

**Spiritual Coping**

At both time points, adolescents completed the Brief RCOPe, a self-report measure of positive and negative religious/spiritual coping strategies that has been validated in both pediatric and adult samples (Cotton, Grossenhe, et al., 2009; Pargament et al., 1998). Positive spiritual coping involves cognitions related to seeking spiritual support (e.g., “seeking God’s help in letting go of anger”) or reframing a difficult situation from a spiritual perspective (e.g., “trying to see how God might be trying to strengthen me”), whereas negative spiritual coping involves reframing difficult situations in terms of spiritual punishment or abandonment (e.g., “wondering what I did for God to punish/abandon me”) or questioning God’s power. The 14 items (7 positive and 7 negative spiritual coping) are rated on a 4-point scale measuring the frequency or extent to which an individual uses each positive or negative spiritual coping strategy (“not at all” [0] to “a great deal” [3]). The items were averaged (baseline α = .90 and .73 for positive and negative spiritual coping; follow-up α = .94
and .84). Thus, scores on the positive and negative spiritual coping scales can range from 0 to 3, with higher scores indicating more frequent use of positive or negative spiritual coping. For example, a mean score of 0 would indicate no use of the assessed spiritual coping strategies, whereas a mean score of 3 would indicate frequent use of each coping strategy.

Adolescent Depressive Symptoms
At both time points, adolescents completed the self-report version of the Behavioral Assessment System for Children-Second Edition (BASC-2) (Reynolds & Kamphaus, 2004). The 12-item depression subscale was used to measure depression. Raw scores were used instead of standardized scores owing to their greater variability, particularly at low levels of psychopathology, as was present in this sample (Heflinger, Simpkins, & Combs-Orme, 2000). Because some items on this scale were rated on a 4-point scale (“never” to “always”) but others were dichotomous (true/false), all items were converted into z-scores and averaged (baseline $\alpha = .84$; follow-up $\alpha = .81$). Higher scores indicate more depressive symptoms.

Adolescent Conduct Problems
At both time points, caregivers completed the parent version of BASC-2 (Reynolds & Kamphaus, 2004). The 14-item conduct problems scale was used. All items were rated on a 4-point scale (from 1 – “never” to 4 – “always”) and averaged (baseline $\alpha = .87$; follow-up $\alpha = .83$). Higher scores indicate more adolescent conduct problems.

Statistical Analyses
The data were examined for outliers and violations of normality, linearity, and other assumptions of path modeling. Bivariate relationships among variables were examined with Pearson’s correlations for continuous variables, point-biserial correlations for dichotomous variables, and t tests.

Prospective reciprocal relationships among positive and negative spiritual coping, depressive symptoms, and conduct problems were analyzed with an autoregressive cross-lagged path model in Mplus version 7 (Mutheén & Mutheén, 2013). Missing data (1% of all data points) were handled with full information maximum likelihood, which provides unbiased estimates and standard errors when data are missing at random (Enders, 2010). This approach allowed us to use the full sample size of 128 in these analyses. The model included autoregressive paths linking the same variables over time, as well as cross-lagged paths prospectively linking each variable with all others. Variables measured at the same time point were allowed to covary, and all paths were adjusted for demographic variables that were related to any of the variables (gender, ethnicity, diagnosis, and annual family income). Baseline variables were also adjusted for age at baseline, and follow-up variables were adjusted for age at follow-up. A good model fit is indicated by comparative fit index values $> .90$ and root mean square error of approximation of $\leq .05$ (Hu & Bentler, 1999). Possible disease differences in model paths were tested with multigroup modeling. The $\chi^2$ difference tests compared the unconstrained model, in which all paths were allowed to vary across the two disease groups, with the constrained model, where all paths were fixed to be equal for the two disease groups. Significant differences would indicate disease differences in the overall model.

Results
Preliminary Analyses
Descriptive analyses identified five outliers on the outcome variables, which were truncated to a raw score corresponding to 3 SDs above or below the mean. No significant violations of normality were detected, as indicated by skewness values ranging from $-1.13$ to $1.90$ and kurtosis values ranging from $-2.02$ to $2.55$ (Kline, 2011). Scatterplots confirmed linear relationships among continuous variables.

The means, standard deviations, and correlations of all continuous and dichotomous variables are presented in Table I. Average levels of positive spiritual coping ranged from 1.86 to 2.06 across the two time points, corresponding to using multiple positive spiritual coping strategies often. Mean levels of negative spiritual coping ranged from .36 to .49, reflecting relatively infrequent use of these coping strategies. Positive and negative spiritual coping were not significantly related at baseline ($r = .14$, $p = .13$) or follow-up ($r = .18$, $p = .10$). However, negative spiritual coping at baseline was associated with more frequent use of positive spiritual coping at follow-up ($r = .27$, $p < .01$). Baseline negative spiritual coping was also associated with higher baseline levels of depression ($r = .37$, $p < .01$) and conduct problems ($r = .21$, $p < .05$). Baseline positive spiritual coping was associated with fewer conduct problems ($r = -.20$, $p < .05$), as well as less depression at follow-up ($r = -.37$, $p < .01$).

Adolescent-reported depression and caregiver-reported conduct problems were positively interrelated at both time points ($r = .43$ and .33, both $p < .01$). Higher baseline levels of depression were associated with higher follow-up conduct problems ($r = .31$, $p < .01$) and greater use of negative spiritual coping strategies ($r = .43$, $p < .01$).
Depression at follow-up was also related to more negative spiritual coping at follow-up ($r = .26$, $p < .05$).

Independent-samples $t$ tests indicated that, compared with Caucasian adolescents, ethnic minority adolescents report higher levels of negative spiritual coping at both baseline ($M = .83$ vs. .43; $t(24) = -2.96, p < .01$) and follow-up ($M = .65$ vs. .31; $t(16) = -2.13, p < .05$), as well as higher levels of positive spiritual coping at follow-up only ($M = 2.41$ vs. 1.75; $t(28) = -3.53, p < .01$). No gender or disease differences emerged on any variable. Paired-samples $t$ tests revealed a significant decrease in negative spiritual coping from baseline to follow-up [from $M = .49$, $SD = .47$ to $M = .36$, $SD = .44$; $t(82) = 2.71$, $p < .01$]. There were no significant changes in positive spiritual coping ($p = .12$) or conduct problems ($p = .35$). Because depression scores were standardized within each time point, changes in depression over time could not be analyzed.

**Main Analyses**

The autoregressive cross-lagged path model (see Figure 1) linking positive and negative spiritual coping, depression, and conduct problems over time had excellent fit to the data [$\chi^2(24) = 24.04, p = .46$; comparative fit index = 1.00; Tucker Lewis Index = .99; root mean square error of approximation = .00]. Spiritual coping, depressive symptoms, and conduct problems had moderate stability over time ($\beta = .31–.47$). Depression and conduct problems were related at each time point ($\beta = .41$, $p < .001$).

Positive and negative spiritual coping were not related to each other at baseline or follow-up.

Baseline positive spiritual coping predicted lower levels of depression ($\beta = -.38, p < .001$) and less negative spiritual coping at follow-up ($\beta = -.18, p < .05$). Baseline negative spiritual coping predicted more positive spiritual coping over time ($\beta = .22, p < .05$). Baseline depression predicted higher levels of negative spiritual coping ($\beta = .33$, $p = .001$) and more conduct problems at follow-up ($\beta = .23, p < .05$). Conduct problems did not predict any follow-up variable. The percentages of variances explained by the model in the follow-up variables were 27% for positive spiritual coping, 42% for negative spiritual coping, 22% for depression, and 25% for conduct problems. The multigroup analysis did not indicate the presence of disease differences [$\Delta \chi^2(37) = 43.55, p = .21$].

**Discussion**

Spiritual coping is related to emotional and behavioral adjustment of youth with chronic illness, but our understanding of the dynamic longitudinal relationships between these variables has been limited. To address this gap, the present study examined prospective bidirectional relationships among positive and negative spiritual coping, depressive symptoms, and conduct problems in adolescents with cystic fibrosis or diabetes. The results revealed reciprocal relationships between spiritual coping and depression, suggesting that the use of positive spiritual
coping may protect against depression over time, and in turn, low levels of depression may prevent individuals from using negative spiritual coping strategies. Positive and negative spiritual coping were also reciprocally related, with more positive spiritual coping predicting less negative spiritual coping over time, and, interestingly, more negative spiritual coping predicting more positive spiritual coping. Finally, higher levels of depression predicted more conduct problems over time. These relationships did not vary between adolescents with diabetes versus cystic fibrosis.

**Spiritual Coping and Mental Health**

This is the first study that evaluated prospective reciprocal relationships between spiritual coping and psychological adjustment among adolescents with chronic illness. After controlling for the effects of demographic variables, results revealed that positive spiritual coping predicted less depression over time. This finding extends cross-sectional research linking positive spiritual coping with better emotional adjustment in pediatric patients (Reynolds et al., 2013; Shelton et al., 2005). This suggests that more frequent use of positive spiritual coping may buffer pediatric patients from developing depression over time by providing a unique source of support when other sources of support are limited, as is often the case due to hospitalizations or other illness-related disruptions (Pargament et al., 1998; Park, 2007). Positive spiritual coping may also be associated with lower levels of depression by promoting an optimistic attribution style, whereby patients appraise negative events as external, unstable, and specific (Peterson et al., 1982; Reynolds et al., 2013).

Consistent with theory (Pargament, 2009; Pargament et al., 1998), the results also suggest that spiritual coping strategies are influenced by mental health. For adolescents coping with illness, depression may mobilize maladaptive negative spiritual coping strategies such as reappraising their illness as a spiritual punishment. Despite patients indicating, on average, infrequent use of negative spiritual coping strategies, examination of the Brief RCOPE items at both time points revealed that >30% of the sample endorsed sometimes wondering what they had done for God to punish them (with illness). The prospective relationship between depression and negative spiritual coping is consistent with research linking depression and general pessimistic attributions, whereby individuals view negative events as being due to internal, global, and stable causes (Peterson et al., 1982). In turn, pessimistic attributions exacerbate internalizing problems in pediatric patients (Frank, Blount, & Brown, 1997; Schoenherr, Brown, Baldwin, & Kaslow, 1992) and may also increase the use of negative spiritual coping. Although negative spiritual coping did not predict depression in our adolescent sample, it may lead to depression later in development, as suggested by studies with adult patients (Pargament, Koenig, Tarakeshwar, & Hahn, 2004). Longitudinal research following adolescents with chronic illness into adulthood would help clarify the developmental course and timing of these relationships.

**Positive and Negative Spiritual Coping**

At both time points, adolescents endorsed using positive spiritual coping more frequently than negative spiritual coping, consistent with theory and empirical research (Pargament & Hahn, 1986; Pargament et al., 1998). Positive and negative spiritual coping were unrelated at either time point. Over time, however, more frequent use of positive spiritual coping predicted less frequent use of negative spiritual coping, while more negative spiritual coping predicted greater use of positive spiritual coping. Although this may initially seem contradictory, cross-sectional studies with pediatric and adult patients with chronic illness have found moderate positive correlations between positive and negative spiritual coping (Ai, Wink, Tice, Bolling, & Shearer, 2009; Benore et al., 2008; Fitchett et al., 2004; Pargament et al., 1998), suggesting that individuals may use both positive and negative spiritual beliefs to cope.

Our results suggest that more frequent use of positive spiritual coping may diminish the use of maladaptive negative spiritual coping over time—an important finding because studies with adults with chronic illness have linked negative spiritual coping with declines in mental and physical health over time (Pargament, Koenig, Tarakeshwar, & Hahn, 2001; Trevino et al., 2010). However, our results also suggest that negative spiritual beliefs may bring about spiritual benefit or growth (Fowler, 1981; Pargament, 2011). For instance, pediatric patients who fear that they have been spiritually abandoned may pursue reconnection with a higher power by praying or seeking spiritual collaboration, thereby increasing their use of positive spiritual coping over time. Spiritual growth as a result of illness has been described among adult patients (Cordova, Cunningham, Carlson, & Andrykowski, 2001) and caregivers of childhood cancer survivors (Hensler, Katz, Wiener, Berkow, & Madan-Swain, 2013), but it has not been studied among pediatric patients. Future research should assess spiritual growth in pediatric populations using validated measures, such as the Spiritual Transformation Scale (Cole, Hopkins, Tisak, Steel, & Carr, 2008), and with negative spiritual coping as a predictor.
Depression and Conduct Problems

In our sample of adolescents with chronic illness, depressive symptoms predicted more conduct problems over time. It has been theorized that youth with depression are at risk for developing conduct problems because the irritability and negative affect that is characteristic of pediatric depression may increase conflict with others and subsequent acting out behaviors (Wolff & Ollendick, 2006). For pediatric patients, depression may exacerbate irritability and disease-related frustrations, including low perceived control over symptoms and treatment, restricted participation in social activities (e.g., owing to hospitalization or home treatment demands), or peer rejection/difficulty making friends, that consequently put them at increased risk for developing externalizing problems (Pinquart & Shen, 2011).

However, the observed link between depression and subsequent conduct problems may reflect reporter bias. In the present study, adolescents reported on their depression, whereas their primary caregiver reported on conduct problems. Because parents caring for children with illness experience distress (Cheshire, Barlow, & Powell, 2010; Sloper, 2000), which can be magnified by their child’s depression, they may report biased estimates of their child’s behavior (Youngstrom, Loeber, & Stouthamer-Loeber, 2000). Unfortunately, the adolescent-report measure of adjustment used in this study (the BASC-2) does not include the conduct problems scale. Future research should replicate these relationships using the same reporters (e.g., child or parent) of emotional and behavioral functioning.

No Disease Differences

This was the first longitudinal study to examine disease differences in the relationships between spiritual coping and psychological adjustment. Our previous cross-sectional research revealed disease differences such that negative spiritual coping was related to more internalizing problems only among adolescents with cystic fibrosis versus those with diabetes (Reynolds et al., 2013). In the current study, the two disease groups reported similar levels of spiritual coping, depression, and conduct problems, and no disease differences emerged in the prospective relationships. This suggests that spiritual coping is relevant to and plays an important role in the long-term adjustment of youth with cystic fibrosis and diabetes, and possibly other pediatric illness groups as well. The results also highlight that depression may put patients, in this case those with diabetes and cystic fibrosis, at risk for using maladaptive coping strategies over time and developing externalizing problems. Future research exploring disease differences should include additional pediatric populations and examine relationships at multiple time points to capture differences due to differential disease course. Including a control group of healthy youth would also be helpful to determine whether the studied relationships are unique to youth with chronic illness.

Clinical Implications

In adolescents with cystic fibrosis or diabetes, the use of positive spiritual coping predicted lower levels of depression at follow-up, whereas depression predicted more use of negative spiritual coping over time. These findings have important implications for clinical practice. As part of an intake or psychosocial assessment, clinicians can use brief validated measures to screen pediatric patients for depression, spiritual distress, and use of spiritual coping strategies (King, Fitchett, & Berry, 2013; Pargament et al., 1998). Adolescents who report using spirituality to cope may benefit from interventions helping them strengthen their positive spiritual coping beliefs and/or decrease their negative spiritual coping. Such interventions may be particularly relevant if depression or other adjustment difficulties are present. The use of interdisciplinary medical teams that include pediatric psychologists and pastoral care will be important for providing such integrated clinical care.

Strengths, Limitations, and Future Directions

This study extended existing literature by examining the prospective reciprocal relationships between spiritual coping and psychological adjustment in adolescents with chronic illness and by exploring disease differences. Methodological strengths include the longitudinal design, inclusion of multiple disease groups, and use of path modeling to simultaneously estimate all relationships. However, this study had several limitations. First, the time between baseline and follow-up may not have been optimal to capture the effects of spiritual coping on adjustment and vice versa. It is possible that studies using shorter intervals between assessments may uncover stronger or additional relationships. The time between baseline and follow-up also varied across participants. Results did not change when time was added as a covariate, but the variation in time may have attenuated some of the studied relationships. Second, this study did not measure secular coping strategies or assess religiosity at both time points, and thus was not able to determine the unique role of spiritual coping in adjustment. Third, the study was limited by the relatively high attrition rate. Although we expended substantial resources tracking and recruiting families for follow-up assessment, many families were too
busy to continue their participation. This is not surprising given the stress and time demands associated with disease symptoms and management (Barlow & Ellard, 2006). This limitation is somewhat mitigated by the general lack of differences between those who were versus were not retained and by using full information maximum likelihood to use all available data. A related limitation is the relatively small sample size, despite providing sufficient power (>0.90) to detect well-fitting models (MacCallum, Browne, & Sugawara, 1996). Finally, the sample was predominately Christian, reflecting the geographic area in which it was recruited (Kosmin, Mayer, & Keysar, 2001), and thus may not generalize to patients residing in locations with different patterns of religious affiliation. In addition, the spiritual coping measure (Brief RCOPE) presumes a monotheistic religious orientation and may not capture spiritual coping among individuals with other theistic belief systems (e.g., Hinduism).

Despite these limitations, this study provides important clinically relevant information about the dynamic relationship between spiritual coping and psychological adjustment among adolescents with chronic illness. The results suggest that more frequent use of positive spiritual coping may buffer pediatric patients from depression and using maladaptive negative spiritual coping strategies, the importance of which is highlighted by our finding that depression predicted conduct problems and negative spiritual coping over time. Thus, for patients who endorse spirituality as an important coping mechanism, not using positive spiritual coping may contribute over time to depression, negative spiritual coping, and conduct problems.

Importantly, these results did not vary by disease, suggesting that pediatric patients dealing with various medical conditions, and for whom spirituality is important, may be at risk for long-term adjustment and coping difficulties if they do not use positive spiritual coping. Given the harmful effects of depression and conduct problems on disease self-management, treatment adherence, and long-term adjustment, protective psychosocial factors, such as positive spiritual beliefs, should be considered when providing medical care for adolescents with chronic illness. For patients exhibiting adjustment difficulties, positive and negative spiritual coping could be assessed using validated measures (King et al., 2013; Pargament et al., 1998) and targeted via interdisciplinary teams and cognitive interventions addressing spirituality (Cole, 2005). Future research should further explore the role of spiritual coping in adjustment through intervention development and longitudinal designs with multiple time points and inclusion of variables related to spiritual coping, such as religious practices and secular coping.

### Funding

Cystic Fibrosis Foundation and from the Sigma Xi Grants-in-Aid of Research program to K.G.

### Conflicts of interest

None declared.

### References


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