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Mediating effects of coping in the link between spirituality and psychological distress in a culturally diverse undergraduate sample

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The present study sets out to examine the spirituality-coping-health link in a culturally and religiously diverse undergraduate sample (N = 301) in Canada. Specifically, this investigation: (a) assessed intrinsic spirituality with a factorially derived measure, created based on a multidimensional measure of spirituality; (b) tested the mediating role of coping in the spirituality-psychological well-being relation with a validated cross-cultural measure of coping; and (c) examined this complex, multivariate web of relationships with a path analysis. The results showed that Intrinsic Spirituality reduced Psychological Distress, promoted the use of Collective Coping, and reduced the use of Avoidance Coping. Furthermore, Engagement Coping reduced Psychological Distress while Avoidance Coping increased the distress. The findings suggest that one way in which spiritual faith and belief can act to improve individuals' psychological well-being is through promoting adaptive and culturally congruent/appropriate coping behaviours in the face of stressful situations. Implications and recommendations for future research are discussed.

Keywords: spirituality; religion; coping; collective coping; cross-cultural coping; health; psychological distress

Spirituality and religion have been identified as seriously "overlooked" and understudied, constructs within cross-cultural psychological research (Lonner, 2011; Tarakeshwar, Stanton, & Pargament, 2003). Yet the far-reaching influences of religion and spirituality in the lives of individuals, societies, and cultures around the world are evident and well-documented throughout human history (Hall, Meador, & Koenig, 2008). Increasing empirical research has pointed to the particular importance of spirituality and religion in the lives of many individuals, of diverse racial and ethnic backgrounds (Tarakeshwar et al., 2003), especially when responding to stressful, adverse, and even life-threatening circumstances (Constantine, Alleyne, Caldwell, McRae, & Suzuki, 2005; Joseph & Kuo, 2009; Utsey, Adams & Bolden, 2000, for examples). In these contexts, spirituality and religion are often implicated as an essential and prevalent coping mechanism among individuals of racial and ethnic minorities, as well as of immigrant backgrounds (Fischer, Ai, Aydin, Frey, & Haslam, 2010; Kuo, 2011). However, it has been observed that the association between spirituality and cultural influences is currently not well-understood and not adequately investigated within cross-cultural psychology (Saroglou & Cohen, 2011; Tarakeshwar et al., 2003).

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A number of key reviews on this corpus of spirituality-health research have consistently highlighted the positive contributions of spirituality to health outcomes as measured by a wide variety of physical and psychological indicators (see Hall et al., 2008; Hill & Pargament, 2003; Miller & Thoresen, 2003; Pargament, 1997 as examples). While these findings have provided empirical verification for the suspected link between spirituality and health, a major criticism of this body of research is the lack of sophistication and rigour in assessing either spirituality or religion as well as the tendency to treat and measure these constructs as a global, obscure, and unidimensional entity (Hall et al., 2008; Hill & Pargament, 2003; Miller & Thoresen, 2003). Conceptually, it is also not clear how exactly spirituality affects well-being or the specific mechanisms or pathways through which spirituality leads to health (Miller & Thoresen, 2003).

Among the various conceptual explanations of the spirituality-health relationship, the stress-coping model has drawn the most scholarly attention, mainly as a result of Kenneth Pargament and his colleagues' seminal work on "religious coping" (Pargament, 1997, 2002; Pargament, Koenig, & Perez, 2000). In short, this spirituality-driven coping model stipulates that individuals' religious and spiritual resources can be transformed into concrete coping behaviours at times of distress or illness to offset the adverse impacts of stressors on an individual's health (Pargament, 1997, 2002). While evidence supporting the role of religious coping on patients' health abounds (i.e., improving health and reducing mortality), little is currently known about the process through which spirituality interacts with other *non-religious* forms of coping. Even fewer are studies that have examined the spirituality-coping-health association within a cultural conceptual framework involving ethnically diverse samples. The authors' review of the literature yielded only four published studies that specifically investigated the relationships among spirituality, coping, and health with diverse racial, ethnic and international population (i.e., Ahmadi, 2006; Bowie, Curbow, Laveist, Fitzgerald, & Pargament, 2004; Tarakeshwar, Pargament, & Mahoney, 2003; Utsey, Bolden, Williams, Lee, Lanier, & Newsome, 2007).

Thus, the present study attempts to examine the way in which spirituality and psychological health interface through examining the mediating role of three types of coping (i.e., Collective, Engagement, and Avoidance Coping) on the spirituality-health relation in a multicultural sample of undergraduate students in Canada. As such, the current study aims to advance the existing research in this area through: (a) assessing spirituality (i.e., intrinsic spirituality) with a factorially derived measure, created from items in a recently developed multidimensional measure of spirituality; (b) investigating the spirituality-coping-health link with a rare multicultural sample; (c) testing the mediating role of coping in the spiritualty-psychological well-being relation with a validated cross-cultural measure of coping; and (d) examining this complex, multivariate web of relationships simultaneously with a path analysis.

Conceptualisation and measurement of spirituality-religiousness

While spirituality and religion (as well, "religiousness" or "religiosity") are often thought of as synonymous, researchers have distinguished the two as related but discrete constructs. Hill and Pargament (2003) described spirituality as the process by which individuals seek to "discover, hold on to, and when necessary, transform whatever they hold sacred in their lives" (p. 65). Meanwhile religion represents the institutional or the doctrinal context, traditional or otherwise, within which such a spiritual search or quest occurs for the individual (Hill & Pargament, 2003; Pargament, 1997). In this paper, the term "spirituality" is used throughout intentionally to convey a more generic concept that encompasses both non-institutional spirituality and more traditional religiosity (Idler et al., 2003)

Historically, as George, Ellison, and Larson (2002) noted, the empirical research on spirituality and religion has focused mainly on the aspects of: (a) public participation and attendance at

religious activities; (b) religious and denominational affiliation; (c) private religious practices (e.g., prayer, mediation, etc.); and (d) religious coping. Others have proposed to conceptualise spirituality in terms of "intrinsic" versus. "extrinsic" dimensions (Allport & Ross, 1967; Kirkpatrick & Hood, 1990). The intrinsic dimension typifies the non-instrumental, non-social motivations related to religion, which can include a person's spiritual experiences, beliefs, values, and sense of meaning in life (Berry, 2005). In contrast, the extrinsic dimension typically denotes the instrumental or social motivations associated with religion, which are tied to rituals, religious practices, doctrines, and religious observance.

These cumulative empirical and conceptual developments on the research of religion and spirituality culminated in a major effort spearheaded by the working group of the Fetzer Institute in 1995 to capture the multidimensional attributes of spirituality (Fetzer Institute, 1999). A panel of expert researchers associated with the National Institute on Aging subsequently developed the Multidimensional Measure of Religiousness/Spirituality (MMRS; Fetzer Institute, 1999). An abbreviated version of the MMRS was tested and validated with a national sample of Americans in the 1998 General Social Survey; the results demonstrated appropriate reliability and validity for the MMRS (Idler et al., 2003). Incidentally, the MMRS has been identified as the "gold standard" measure by several recent reviews of measurements of religion and spirituality for research on spirituality and health (Koenig, 2008). Given the comprehensive, multidimensional nature and the psychometric strengths of the MMRS in assessing spirituality and religion, this measure was employed in the present research.

Coping within a cultural and cross-cultural perspective

Not unlike spirituality, coping is also a complex, multidimensional construct that has been studied extensively in health, social, and psychological research. In a recent comprehensive review of cultural and cross-cultural coping research cumulated over the last two decades, Kuo (2011) identified unequivocal empirical evidence for cultural differences in preferred coping patterns across national, racial, and ethnic groupings. One example of recently emerged cultural model of coping is represented by the research and the development of the Cross-Cultural Coping Scale (CCCS) (Kuo & Gingrich, 2004; Kuo, Roysircar, & Newby-Clark, 2006). These studies contended and empirically demonstrated that the *etic* (culture-universal) versus the *emic* (culture-specific) aspects of behaviours and the *individualistic* versus the *collectivistic* cultural values undergird coping processes for individuals across cultures (Kuo, 2012; Kuo et al., 2006). The coping model based on the CCCS has been further tested and reported in a number of published studies with developmentally and ethnically diverse samples coping with a wide variety of stressors (e.g., Kuo et al., 2006; Kuo & Gingrich, 2004; Kuo & Guan, 2006; Wester, Kuo, & Vogel, 2006). The psychometrics of the CCCS have been shown to be relatively stable across these studies, suggesting the validity and the usefulness of adopting this cultural model of coping in investigating stress responses among culturally diverse populations. These observations and assertions on the link between culture and coping find support in a study conducted by Ahmadi (2006) with cancer patients in Sweden. Using semi-structure interviews with 51 patients, the study found that the patients' preferred coping methods reflected the cultural values of rationalism, individualism, secularism, natural romanticism, and spirituality (as opposed to religion) of that country.

However, to date the spirituality-coping-psychological distress has rarely been empirically examined within a culturally derived framework of coping specifically. For this reason, the present study sets out to address this very issue by testing non-religious, coping strategies, as measured by the CCCS, as the potential mediators for the spirituality-psychological distress relationship in a sample of culturally and religiously diverse undergraduate participants.

Theory on spirituality, coping, and health relationship

From a theoretical standpoint, the relational pathway concerning spirituality, coping, and health has been most extensively articulated and researched under the work of Kenneth Pargament on religious coping. Pargament's (1997) theoretical framework posits that an individual's religion or spirituality interacts with his or her coping to bring about health consequences in a predictable manner. As such, the person's degree of commitment to a religious faith can directly dictate his/her selection and mobilisation of various religious/spiritual coping strategies; these coping strategies will in turn contribute to the physical, emotional, or spiritual well-being of the individual, including improved mood, resilience, quality of life, etc. Accordingly, such a model construes coping as a critical mediator between spirituality and health (Pargament, 2002).

Given that Pargament's spirituality-driven coping model has focused primarily on the effect of religious/spiritual forms of coping on various illnesses (e.g., Bowie et al., 2004; Pargament, Koenig, Tarakeshwar, & Hahn, 2004), very little is currently known about the extent and the manner through which spirituality interacts with more generic, non-religious forms of coping. The only exception was the study by Utsey et al. (2007). That study tested and found that spiritual well-being was a partial mediator of the relation between culture-specific coping (the predictor) and quality of life (the criterion) in a community sample of 281 African Americans. The authors asserted that the results of the study corroborate Pargament's spirituality-driven coping model.

The present study

Previous researchers have advocated strongly for more rigorous methods and designs to be used with investigating the spirituality-psychological health association, in terms of: (a) exploring and testing the causal relationships between spirituality and health (George et al., 2002); and (b) incorporating more sophisticated multivariate statistical techniques (e.g., structural equation modelling) in the data analyses (Berry, 2005; Utsey et al., 2007). Heeding these recommendations, in this study a path analysis was employed to examine the spirituality-coping-psychological distress link in undergraduate students. The research questions in this study are: (a) *"What effect does spirituality have on the psychological symptoms of the current ethnically and religiously*

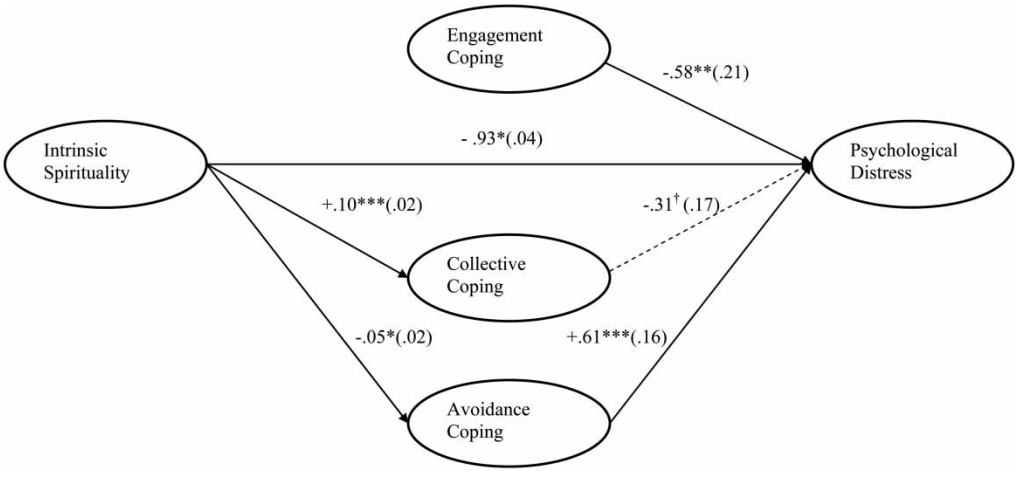

Figure 1. The mediation model and its path coefficients.
Note: $N = 301$; *ρ < .05, **ρ < .01; ***ρ < .001. The values in brackets represent standard errors. Dotted line designates the path coefficient approaching significance with $^{\dagger}\rho = .08$.

diverse undergraduate sample?"; and (b) *"How does spirituality interact with individuals' coping behaviors, as measured by a multidimensional coping scale derived from a cultural perspective of coping, to affect the psychological distress of the current undergraduate sample?"*

Thus, a hypothesised model was proposed and tested with a path analysis in the present investigation. It was posited that Spirituality would contribute to the reduction of psychological distress through the direct and/or indirect effects of coping behaviours (Bowie et al., 2004) (see Figure 1). It was additionally predicted that spirituality would form a positive relationship with Collective Coping – a prediction based on preliminary findings on Collective Coping behaviours' link to religious identity of diverse groups as reported in previous research (Fischer et al., 2010; Kuo et al., 2006). It was also predicted that spirituality would form a positive relationship with Engagement Coping, but a negative relationship with Avoidance Coping. Finally, Engagement Coping and Collective Coping were hypothesised to form a negative relationship while Avoidance Coping was hypothesised to form a positive relationship with Psychological Distress (Wester et al., 2006).

Methods

Procedure

The participants were undergraduate students in a university in southwestern Ontario, Canada. The majority of the sample was recruited through the Participant Pool System at the university's Department of Psychology. All participants read and signed an informed consent form and then completed a paper-and-pencil questionnaire in the first author's research lab in the Department of Psychology. The questionnaire took about 25–30 minutes to complete.

Participants

The sample consisted of 301 undergraduate students (229 women and 72 men) with a mean age of 22.79 (SD = 2.99). The predominance of women in the current sample likely reflects a high portion of female students taking psychology courses or completing a major in psychology. The current sample was represented by ethnically and religiously diverse participants. With White/Europeans (29.83%) represented the largest group followed by South Asians (19.32%) (see Table 1). With respect to religious preferences, 51.8% self identified as Christians/Catholics, 14.3% as Muslims, 5% as Hindus, 4% as Sikhs, 3% as Buddhists, 2% as "other", 1.7% as "multiple", 13% as "atheists", and 5.3% as "agnostics". Ethnic group differences on the scores of key variables included in the hypothesised model were tested. Significant ethnic group differences were only found on the scores of Intrinsic Spirituality ($F(5, 289) = 13.71$, $p < .001$) and Avoidance Coping ($F(5, 289) = 4.55$, $p < .005$) across the six major cultural groupings in this study. These scores are reported in Table 1.

Measures

Brief symptom inventory-18 items

The Brief Symptom Inventory-18 (BSI-18; Derogatis, 2000) was used in the current study to measure participants' level of psychological distress. The BSI-18 is an abbreviated version of its parent scale, the Brief Symptom Inventory (Derogatis, 1993). It measures psychiatric and psychological outcomes in terms of: depression, anxiety, and somatisation. In responding to the items on the BSI-18, participants were asked to indicate their degree of psychological symptoms for at least one-week during the past year, using a 5-point Likert scale ranging from 0 = not at all to 4 = extremely. Scores can be calculated for subscales, corresponding to each of the three

Table 1. Ethnic group distribution, means, standard deviations, and ethnic group differences in intrinsic spirituality and avoidance coping.

	Group Distribution		Intrinsic Spirituality		Avoidance Coping	
Ethnic Groups	*N*	%	Mean	*SD*	Mean	*SD*
Black	42	14.24	54.79	22.25	29.40	5.86
Caucasian	88	29.83	70.75	19.03	28	7.15
East Asian	49	16.61	80.82	20.35	32.14	6.88
South Asian	57	19.32	58.47	16.90	31.67	6.46
Middle Eastern	39	13.22	54.54	17.79	32.68	6.40
Other	20	6.78	67.35	24.34	31.63	6.82
F (5, 289)			13.71**		4.55*	
η^2			.19		.07	

Note: Only the two variables, Intrinsic Spirituality and Avoidance Coping, with significant ethnic differences are reported in this table.

*$p < .005$; **$p < .001$.

symptom dimensions, and/or for overall psychological distress. For the present study the Cronbach's alphas for the depression, the anxiety, and the somatisation subscales were .85, .82, and .80, respectively. However, the overall score of the BSI-18 was used to test the proposed model and the overall scale had a Cronbach's alpha of .90.

Cross-cultural coping scale

The Cross-Cultural Coping Scale (CCCS; Kuo et al., 2006) is a scenario-based coping measure that includes items reflecting collectivistic as well as individual-focused and intrapersonal-based coping responses. The original CCCS is composed of 20 items with three subscales: Collective Coping, Avoidance Coping, and Engagement Coping. The items of the CCCS are scored on a 6-point Likert scale ranging from 1 = very inaccurate to 6 = extremely accurate. According to the test developers the three coping subscales are represented by: (a) *Engagement Coping*; (b) *Collective Coping*; and (c) *Avoidance Coping* (Kuo et al., 2006). In completing the coping items, the respondents are asked to focus on a specific stressor by reading and imagining themselves in a hypothetical stress vignette. Given the present study's focus on psychological distress among university students, the participants in this study read a scenario describing a student's struggle with depressive symptoms (i.e., sadness, loss of interest and motivation, social isolation, insomnia, and poor appetite) due to concern over poor academic performances and worry about future direction. For the present study, a modified version of the CCCS was used with three coping items added to each of the Engagement Coping and the Avoidance Coping subscales with the intent to boost the internal consistencies of these subscales. Each subscale was factor analysed using principle axis factoring and found to be unidimensional based on Velicer's mean average partial correlation criterion (Velicer, 1976). In this study, the Cronbach alphas for Engagement, Collective, and Avoidance Coping subscales of the CCCS were .77, .75, and .70, respectively.

Brief multidimensional measure of religiousness/spirituality

The 40-item Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) is a measure composed of 12 spirituality and religiousness domains deemed most relevant to health outcomes by a panel of experts in the field of spirituality and health research (Fetzer Institute,

1999). The psychometric characteristics of the BMMRS were tested with a large-scale sample (N = 1445) based on the 1998 General Social Survey in the United States and showed appropriate degree of reliabilities and validities (Idler et al., 2003). While the full 40-items BMMRS was administrated to the participants in the present study, only the scores of 19 items named as the Intrinsic Spirituality subscale by the authors were used in the path analysis based on the result of an exploratory factor analysis. The procedure and the results of the factor analysis are described in greater detail in the following results section.

Results

Due to the fact that the BMMRS is a new measure of spirituality, it was necessary for the present study to first examine the psychometric properties of the scale with the present culturally diverse sample. The initial analysis of the BBMRS involved leaving out the scale items with low response rates, and an initial principal components analysis followed by Varimax rotation. After a direct oblimin rotation, two components stood out; one factor being referred to as the "Intrinsic Spirituality" factor, and the other the "Participation in a Congregation" factor. A final hierarchical factoring was carried out, using the 19 items representing Intrinsic Spirituality and the four items associated with social support/interaction with fellow congregational members. A total of 24.0% of the variance was found to be shared between these two factors.

The 19-item Intrinsic Spirituality factor represented various scale items from the full BMMRS: the Spiritual Experiences Subscale (6 items), the Beliefs and Values Subscale (1 item), the Forgiveness Subscale (1 item), the Private Religious Practice Subscale (4 items), the Religious and Spiritual Coping Subscale (3 items), the Overall Self-Ranking Subscale (2 items) and the Meaning Subscale (2 items). Given the personal and the experiential quality of these items, the researchers deemed "Intrinsic Spirituality" to be an appropriate label for this factor (Berry, 2005; Kirkpatrick & Hood, 1990). The overall reliability among the items in the Intrinsic Spirituality factor was high, with an alpha of .95.

The other factor, which was represented by 4 items concerned with congregational support and social interaction, accounted for only 5.9% of the variance in the data. This factor also did not correlate significantly with other measures in the study. As a result, only item scores for the first factor, Intrinsic Spirituality, were included in the path analysis to test the spirituality-coping-psychological distress association.

The basic descriptive statistics for the key variables in the hypothesised model are presented in Table 2. As reported in the previous section, there were significant ethnic group differences on the scores of Intrinsic Spirituality and Avoidance Coping across the six major cultural groups in this study (see Table 1). However, the groups were not significantly different on the scores of Engagement Coping (F(5, 289) = 1.35, p = .24), Collective Coping (F(5, 294) = 1.02, p = .41), and

Table 2. Means, standard deviations, and intercorrelations for the predictor and outcome variables in the model.

Variables	Mean	*SD*	1	2	3	4	5
1. Engagement Coping	29.64	6.75	–				
2. Collective Coping	37.43	5.36	.25***	–			
3. Avoidance Coping	30.42	6.82	−.21***	−.04	–		
4. Intrinsic Spirituality	65.61	21.64	+.03	+.29***	−.15*	–	
5. Psychological Distress	20.13	13.06	−.30***	−.19*	.28***	−.05	–

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Psychological Distress ($F(5, 286) = 1.33$, $p = .23$). Since ethnicity was not tested as a predictor in the model and that the cultural groups did not differ significantly on the outcome variable Psychological Distress while controlling for coping, the hypothesised model was tested with the inclusion of all participants in the sample.

According to Bollen, Kirby, Curran, Paxton, and Chen's (2007) simulations, when researchers are not sure whether their initial model is correct or not, and must therefore be ready to explore their data, standard path analysis may well outperform structure equation modelling. Path analysis was employed in the present investigation, but because the alphas of the CCCS subscales were lower than .80 an adjustment was made to the regression results to correct for unreliability in these predictors of psychological distress. This was done through the subroutine eivreg (Errors in Variables Regression) in STATA 11 (StatSoft Inc., 2012). The betas and standard errors differed only modestly from those obtained through Ordinary Least Squares, but those corrected for random error reflect a more realistic view of the data, and are therefore presented here.

As shown in Figure 1, the resultant model supported the originally hypothesised model in the following respects. First of all, Intrinsic Spirituality was found to positively predict Collective Coping ($\beta = .10$, $p < .001$) and to negatively predict Avoidance Coping ($\beta = -.49$, $p < .05$). These results were in line with the directions of the paths hypothesised in the original model. Secondly, a direct effect from Intrinsic Spirituality to Psychological Distress was also identified ($\beta = -.09$, $p < .05$) as had been predicted. Thirdly, consistent with the hypothesis Engagement Coping ($\beta = -.58$, $p < .01$) was shown to negatively predict Psychological Distress while Avoidance Coping ($\beta = .63$, $p < .001$) was shown to positively predict Psychological Distress.

However, the original hypotheses were not supported in the following two paths. First, Intrinsic Spirituality did not predict Engagement Coping at a statistically significant level ($\beta = -.01$, $p < .50$). Second, Collective Coping did not predict Psychological Distress at statistically significant level ($\beta = -.31$, $p < .10$) as hypothesised, although it should be noted that the path coefficient for this relationship was near the .05 significance level and the direction of the path was consistent with what was predicted.

Discussion

The present study sets out to examine the mediating effects of non-religious coping behaviours on the spirituality-psychological well-being association, grounded in a cross-cultural framework of coping. First, the result showed the clearest mediating effect in the significant paths linking Intrinsic Spirituality to Avoidance Coping to Psychological Distress. In this study the quality of intrinsic spirituality was characterised by individuals who reported to have a personal relationship with God, to hold strong conviction about God's presence, to routinely practice spirituality/religion in private, to rank the role of their spirituality as high or with great importance, to derive significant meaning from their spirituality/religion, to enlist positive religious stress responses frequently, and to engage regularly in the act of receiving forgiveness from God and forgiving others. This finding suggests that Intrinsic Spirituality effectively reduced the participants' tendency to resort to avoidance coping behaviours (i.e., distracting or diverting one's attention from the stressor) in responding to the depression and the stress caused by poor academic performance. In turn, a positive path linking Avoidance Coping to Psychological Distress was also found, implicating that the use of avoidant coping by the undergraduate students led to increased psychological symptoms in the present sample. This latter relationship points to the maladaptive nature of avoidance coping as cited in previous cross-cultural coping research with racial and ethnic minority populations across multiple stress situations, including racial discrimination (Noh & Kasper, 2003) and gender role conflicts (Wester et al., 2006). In short, the evidence here denotes that Intrinsic Spirituality benefits undergraduate participants psychologically by limiting their

tendency to engage in unhelpful and/or counterproductive avoidance behaviours in dealing with academic difficulties. This finding counters a frequent misconception that equates religious and spiritual devotion to passivism, withdrawal, or even fatalistic attitude. These findings clearly substantiate the positive implications of "healthy spirituality" (Hall et al., 2008).

Secondly, as hypothesised, a positive path between Intrinsic Spirituality and Collective Coping was found in the proposed model. This finding is particularly significant because this relationship had not been investigated directly until the present study. Although a limited number of previous published works on cross-cultural coping have provided some clues that are in-line with the current finding (e.g., Kuo, 2012; Utsey et al., 2007). For instance, in a recent comprehensive review of coping among Muslim believers, Fischer et al. (2010) observed a greater tendency among Muslims to use collective coping (interpersonally oriented coping) across a broad range of stressful life events in comparison to Christians. The authors attributed this to strong collectivism and communalism embedded in the Muslim religious self-identity, and linking higher spiritual and religious orientation to collectivistic behaviours and attitudes. It is plausible that spirituality may well represent a critical component of many ethnic individuals' cultural and ethnic identity and may motivate them to endorse coping methods that conform to their ingroups (Constantine, Donnelly, & Myers, 2002).

Contrary to the prediction, however, the path between Collective Coping and Psychological Distress was not statistically significant at .05. Despite this failed prediction, this result is consistent with a previous coping study of Chinese Canadian adolescents using the same coping measure, the CCCS (Wester et al., 2006). Conceptually, it can be surmised that narrowly construed psychological distress symptoms might not have been the most ideal health indicator to test the predictability of Collective Coping. Given the unique interpersonal and ingroup-oriented quality of collective coping, it may be argued that alternative, non-symptomatic and/or relational-based indicators of well-being might have been more "sensitive" or fitting criterion or measures to be used to detect the effect of Collective Coping on health outcomes. For instance, future research would benefit from examining the effect of collective coping by assessing it with other outcome variables such as measures of quality of life, social support, positive or negative affects, collective self-esteem, family relationship quality, ingroup cohesion harmony, etc. (Utsey et al., 2007).

Thirdly, no significant relationship between Intrinsic Spirituality and Engagement Coping was found in the current model. This suggests that Intrinsic Spirituality, as represented by a personal devotion to and private conviction in one's faith or belief, has minimal to no bearing on prompting ethnically diverse participants to choose direct actions or confrontations as coping strategies in response to their academic stressors. However, the results did show that the endorsement of Engagement Coping by the participants actually reduced their Psychological Distress in the face of school-related stressors (i.e., a significant negative path coefficient between these two variables), as originally hypothesised. This effect lends further support for previous coping research with ethnic minority samples which pointed to the adaptive quality of engagement and problem-focused type of coping strategies in the context of coping with male gender role conflicts (Wester et al., 2006) and racial discrimination (Noh & Kaspar, 2003; Yoo & Lee, 2005).

Finally, in the present sample Intrinsic Spirituality was shown to have a *direct* negative relationship with psychological distress ($b = -.09$, $p < .05$). This finding further extends the existing empirical understanding on the positive relationship between healthy spirituality and health consequences (e.g., Hall et al., 2008; Hill & Pargament, 2003) to culturally diverse individuals. With this direct effect, it can be inferred that Intrinsic Spiritualty, in and of itself, possesses certain inherent buffering qualities that can protect individuals from serious psychological and emotional impacts of stress (at least with respect to academic-related stressors). However, the nature of these

qualities embodied by Intrinsic Spirituality is not apparent within the scope of the current study and it awaits further exploration.

Limitations

The results of the present study need to be viewed and interpreted within a number of methodological limitations. First of all, the present study is based on a cross-sectional survey of which data is collected based on the participants' self-report at a single point in time. Consequently, the causal relationships among Intrinsic Spirituality, Coping, and Psychological Distress were inferred solely based on correlations among these variables. For this reason, this study and its findings should be considered as a preliminary attempt towards understanding the spirituality-coping-health link. Secondly, the unequal gender representation in the sample should be carefully considered in interpreting the findings. In the current sample, the ratio between women and men was 3:1. Clearly, future investigation should either seek for a more gender-balanced sample or study the experiences of women and men separately. Finally, given that the current study was conducted with undergraduate students in a southwestern Ontario university in Canada, the generalisability of the findings to other populations cannot be ascertained without future empirical verifications.

Implications for future research

A number of future research directions can be generated based on the present study. First, the study demonstrates the utility of using a factorially derived measure of intrinsic spiritually, based on a rigorous and comprehensive measure of spirituality, the BMMRS. Future studies on spirituality-health research should continue to adopt and to test the psychometric properties of the BMMRS with populations of varying demographic and developmental backgrounds (e.g., clinical vs. non-clinical sample, different ethnic groups, different age groups, etc.). Second, additional research is needed to verify whether the current proposed mediational model holds for populations of other demographic and developmental characteristics, such as ethnically diverse adult and adolescent samples, community populations outside of the university, recent immigrants, clinical/patient populations, etc.

Third, it will greatly benefit cross-cultural research on spirituality and health to expand the scope of the present investigation. For instance, researchers can test the current model of spirituality-coping-psychological well-being in the context of coping with other stressful situations, such as physical illness, bereavement, trauma, relationship problem, unemployment, etc. This line of research will enable researchers to evaluate the degree of variance or invariance of the current model across diverse stressors. Alternatively, as mentioned earlier, to expand the current model non-symptomatic measures of well-being, such as quality of life, social support, positive or negative affects, collective self-esteem, family relationship quality, and in-group cohesion or harmony, should be examined in future research.

Finally, considering the constraint of the cross-sectional design of the present research, ultimately it is recommended that future research should venture into exploring the spirituality-coping-health pathway using a longitudinal design. This will enable researchers to discern the relationships among these variables across multiple temporal points and hence allow evaluation of the "process" through which spirituality actually evolves as it interacts with coping and health outcomes over time.

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