



Religious coping, general coping strategies, perceived social support, PTSD symptoms, resilience, and posttraumatic growth among survivors of the 2010 earthquake in Haiti

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ABSTRACT

This study examines the relationships between coping strategies, perceived social support, resilience, PTSD symptoms, and posttraumatic growth (PTG) in a sample of 256 survivors of the 2010 Haiti earthquake. The results of the bivariate analysis suggested a significant positive correlation between PTG and resilience, PTSD symptoms, perceived social support, positive religious coping, and active coping. There was a significant positive relationship between perceived social support and resilience and between resilience and active coping. PTSD symptoms were positively correlated with both positive and negative religious coping. Results of the multiple regression analysis indicated that positive religious coping, active coping, perceived social support, resilience, and PTSD symptoms accounted for 34% of the variance in the participants' PTG. The strongest predictor of PTG was positive religious coping, followed by active coping, perceived social support, resilience, PTSD symptoms, and negative religious coping. Implications and recommendations for future research were discussed.

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Introduction

Background

On 12 January 2010, at 4:53pm, an earthquake magnitude of 7.0 on the Richter Scale struck Haiti. This was the most powerful earthquake to hit the country in 200 years (de Ville de Goyet, Sarmiento, & Grünewald, 2010). Approximately 1.5 million people were directly impacted by the earthquake. More than 220,000 people were killed, 300,000 were injured, and about 1.3 million people were homeless, more than 500,000 migrated to other areas in the country.

Posttraumatic stress disorder and posttraumatic growth

Researchers have shown that the 2010 Haiti earthquake had tremendous psychological effects on those who survived the earthquake, including posttraumatic stress disorder

(PTSD), anxiety and depressive symptoms among children, adolescents, and adults (Cénat & Derivois, 2014b; Cénat & Derivois, 2015; Derivois, Mérisier, Cénat, & Castelot, 2014). Cénat and Derivois (2014b) reported prevalence rates as high as 36.75% and 25.98% of PTSD and depressive symptoms, respectively among adult earthquake survivors and rates of 36.93% and 46.21% of PTSD and depressive symptoms among children and adolescent survivors (Cénat & Derivois, 2015). Cerdá et al. (2013) also reported a high prevalence rate of PTSD (24.6%) and major depressive disorder (28.3%) in a sample of adult survivors of the 2010 Haitian earthquake.

Over decades, research has focused on the negative consequences associated with natural disasters, however, recent research has revealed that not every individual who experiences extreme trauma and loss suffers from severe psychological disorders (Bonanno, 2004; Bonanno & Mancini, 2012; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Research on PTG suggests that growth often occurs in people following trauma and adversity (Joseph & Linley, 2006; Peterson, Park, Pole, D'Andrea, & Seligman, 2008; Tedeschi & Calhoun, 2004). Two years following the earthquake, O'Grady, Rollison, Hanna, Schreiber-Pan, and Ruiz (2012) found that some Haitian earthquake survivors experienced positive changes. This is referred to as posttraumatic growth (PTG), which is characterised by "an increased appreciation for life in general, more meaningful interpersonal relationships, an increased sense of personal strength, changed priorities, and a richer existential and spiritual life" (Tedeschi & Calhoun, 2004, p. 1).

The occurrence of positive growth in the aftermath of natural disasters is well documented (Cieslak et al., 2009; Hafstad, Kilmer, & Gil-Rivas, 2011; Kilmer & Gil-Rivas, 2010). However, the prevalence rates of PTG may vary considerably across studies, traumas types (Tang, 2007; Xu & Liao, 2011), across cultures, and gender (Splevins, Cohen, Bowley, & Joseph, 2010). Research has identified several contributive and predictive factors of positive growth, which include personality structure, social support, and coping style (Joseph & Linley, 2006; Tedeschi & Calhoun, 2004), being female, younger age, higher education level, highly exposed to the earthquake, PTSD symptoms (Xu & Liao, 2011), optimism, social support, coping strategies (religious coping) (Prati & Pietrantonio, 2009), sociocultural factors (Calhoun & Tedeschi, 2004), and spirituality (O'Grady et al., 2012).

Research that examined the relationship between PTG and PTSD symptoms has been less consistent. While some researchers found a positive relationship between PTG and PTSD (Wild & Paivio, 2004), others found a negative relationship, or no relationship at all (Cordova et al., 2007). Some studies suggest that individuals who experience severe PTSD symptoms are more likely to report higher PTG levels than those who did not (Dekel, Ein-Dor, & Solomon, 2012; Park, Aldwin, Fenster, & Snyder, 2008). Conversely, other researchers found that individuals who reported more PTSD symptoms were less likely to experience growth (Frazier, Conlon, & Glaser, 2001). PTSD symptoms and PTG may co-exist in people who experience trauma (Taku, Calhoun, Cann, & Tedeschi, 2008).

Resilience and posttraumatic growth

Resilience plays a significant role in coping and recovery in the aftermath of a natural disaster. From the Latin word *resilire* (to recoil or leap back), resilience refers to the ability to bounce back following trauma and adversity. Resilience is a dynamic process (Luthar, Cicchetti, & Becker, 2000; Norris et al., 2008) that involves several variables, such as gender,

age, race/ethnicity, education, level of trauma exposure, socio-economic status (SES), social support, previous experience with hardship (Bonanno, Galea, Bucciarelli, & Vlahov, 2007).

Though the construct of PTG has been used interchangeably with resilience, PTG differs from resilience in that many, if not most, people show resilience in response to trauma and highly resilient people are generally less likely to benefit from PTG (Westphal & Bonanno, 2007). Posttraumatic growth has been found to be positively associated with resilience and PTSD symptoms by some researchers (Nishi, Matsuoka, & Kim, 2010). While others have found resilience to be negatively associated with PTG (Levine, Laufer, Hamama-Raz, Stein, & Solomon, 2008).

It should be noted that Cénat and Derivois (2014a) found that resilience was positively correlated with social support in a sample of children and adolescents who survived the 2010 Haitian earthquake. In addition, few homeless children who were earthquake survivors, reported significant symptoms of PTSD while a large majority of them displayed moderate to very high level of resilience (Cénat, Derivois, Hébert, Amédée, & Karray, 2018). Depressive symptoms have been associated with resilience scores (Blanc, Rahill, Laconi, & Mouchenik, 2016). However, there have been no specific studies that have established the association between resilience and posttraumatic growth among the adult Haitian earthquake survivors.

Coping strategies and posttraumatic growth

People generally utilise a wide variety of coping strategies when they experience trauma, crisis or stressful events. Coping can be defined as the thoughts and behaviours that individuals use to manage the internal and external demands of situations that are considered as stressful (Folkman & Moskowitz, 2004). Spirituality may play a pivotal role in post-trauma experience and recovery (Vis & Boynton, 2008). Most people generally turn to religion or to spirituality when they face adversity or trauma and they often find this way of coping beneficial (Shaw, Joseph, & Linley, 2005). Most of the Haitian earthquake survivor participants reported increased relationships with a higher power following the trauma (O'Grady et al., 2012). Religious coping was the most effective and consistent coping strategy among the natural disaster survivors. Positive religious coping was significantly related to PTG (Abu-Raiya, Pargament, & Mahoney, 2011; Gerber, Boals, & Schuettler, 2011). Prayer was associated with PTG. Individuals who prayed reported higher levels of PTG (Harris et al., 2010). While positive religious coping is often associated with PTG, negative religious coping was found to be associated with symptoms of PTSD (Abu-Raiya et al., 2011; Leaman & Gee, 2011).

Perceived social support and posttraumatic growth

Research has found social support beneficial to the recovery process in the aftermath of natural disaster. Seeking support is one of the most commonly reported coping strategies among disaster survivors. Perceived social is the extent to which individuals feel family, friends, and the community are available to them. The family context is essential to understanding and meeting the needs of disaster victims (Norris et al., 2002). In the context of the Haitian culture, family plays a pivotal role in the Haitian society (Nicolas, Jean-Jacques, & Wheatley, 2012). Haitians tends to live in extended families with strong family ties that provide support for one another. In certain rural areas, family is organised around the

lakou, a clustered group of families living together (Edmond, Randolph, & Richard, 2007; Nicolas, Desilva, Prater, & Bronkoski, 2009). Family members provide support in times of stress and difficulties (Nicolas et al., 2012).

Perceived social support was directly associated with “relating to others” on the PTG measure (Cieslak et al., 2009). Social support was related to low general psychological distress among Hurricane Katrina survivors (Glass, Flory, Hankin, Kloos, & Turecki, 2009). Religious coping was found to have the largest effect size followed by social support, seeking support coping, spirituality, and optimism factor, which were moderately associated with PTG (Prati & Pietrantonio, 2009).

Purpose of the study

Research on the positive outcomes occurring in the aftermath of potential traumatic events has identified numerous factors that play a role in this phenomenon including personality structure, social support, and coping style (Joseph & Linley, 2006; Tedeschi & Calhoun, 2004). However, most of the studies conducted in this research area focused on trauma survivors from Westernised, individualised or developed countries. Thus, there is a paucity of cross-cultural research on the contributing PTG factors conducted in developing countries, such as Haiti. The purpose of this study was examine the relationships between coping strategies, perceived social support, resilience, PTSD symptoms, and PTG for a group of adult survivors of the 2010 Haiti earthquake.

Method

Participants

A total of 256 Haitian college students and residents living in temporary tents in the Metropolitan areas of Port-au-Prince who survived the 2010 Haitian earthquake participated in this study. About 58.1% were males ($n = 150$). The participants' age ranged from 18 to 60 years. The average age of the participants was 24.68 years ($SD = 7.53$ years). Approximately 85% of the participants reported that they were single. Approximately 44.6% were college students and 43.8% had obtained a high school diploma. About 79.2% of the participants were unemployed. Over 59.1% of participants were Protestants, 24.2% were Catholics and about 42% of the participants reported that they were involved in church activities. Most of the participants (80.5%) were living in the Metropolitan area of Port-au-Prince at the time when the earthquake struck the country. Approximately 53% reported they were living in temporary shelter following the earthquake. Most of the participants (70.6%) reported they lost family member(s) and/or friend(s) during the earthquake.

Measures

Posttraumatic growth was measured with the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), which is a 21-item scale instrument used to assess positive outcomes for persons who have experienced traumatic events. This instrument is composed of five factors: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. The participants were asked to rate the degree to which they experienced the change described by each item using a six-point scale ranging from 0 (“I did

not experience this change as a result of my crisis") to 5 ("I experienced this change to a very great degree as a result of my crisis"). The PTGI has demonstrated substantial internal consistency. The 21-item PTGI Cronbach's alpha was .90 and the five factors' internal consistency were .84 for New Possibilities; .85 for Relating to Others; .72 for Personal Strength; .85 for Spiritual Change; .67 for Appreciation of Life. The PTGI has shown acceptable test-retest reliability for the 21-item was $r = .71$, and for the five factors ranged from $r = .65$ to $r = .74$, except for Personal Strength and Appreciation of Life which had a test-reliability of $r = .37$ and $r = .47$, respectively. Cronbach alpha coefficient was .93 in the present study.

Religious coping was measured with the Brief Religious Coping Scale (Brief RCOPE; Pargament, Feuille, & Burdzy, 2011). The Brief RCOPE is a 14-item Likert scale measure used for the assessment of religious coping with major life stressors, trauma, and transition. Participants were to choose answers from a four-point scale ranging from 1 "not at all" to 4 "a great deal". The Brief RCOPE consists of two subscales: Positive Religious Coping and Negative Religious Coping. The Brief RCOPE demonstrated moderate to high internal consistency. The Cronbach's coefficient alpha was .87 and .78 for positive and negative scales, respectively. In the current study Cronbach alpha coefficient was .94 for the Positive Religious Coping Subscale and .85 for the Negative Religious Coping Subscale.

General coping strategies was measured using the Brief Coping Orientation to Problems Experienced Scale (Brief COPE; Carver, 1997). This is a 28-item self-report questionnaire used to measure various types of coping behaviour and thoughts that a person may experience as a result of a specific situation. It is comprised of 14 subscales with two (2) items per scale, which assesses different coping dimensions such as (1) Active Coping, (2) Planning, (3) Positive Reframing, (4) Acceptance, (5) Humour, (6) Religion, (7) Using Emotional Support, (8) Using Instrumental Support, (9) Self-Distraction, (10) Denial, (11) Venting, (12) Substance, (13) Behavior Disengagement, and (14) Self-Blame. Participants are asked to rate each item on a four-point Likert scale. Response options are in the following format ranging from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). The Brief COPE has been used in research with diverse population, including Hurricane Andrew survivors and has demonstrated good internal reliability. All subscale exceed an internal reliability of .60, except for Venting, Denial, and Acceptance.

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item self-report instrument used to assess perceptions of social support from family, friends, and significant other. The measure consists of three subscales: Significant Other, Family, and Friends. The respondents are asked to rate on a seven-point scale from low to high support, with 1 indicated "Very Strongly Disagree" and 7 if you "Very Strongly Agree". The MSPSS has shown good internal consistency. The Cronbach's coefficient alpha is .91, .87, and .85 respectively for Significant Other, Family, and Friends subscales. The test retest reliability for Significant Other, Family and Friends were .72, .85, and .75, respectively. The reliability for the full scale was .85. However, Dahlem, Zimet, and Walker (1991) found the internal reliability of the MSPSS was .91 for the total scale, .90, .94, .95 for the Family, Friends, and Significant Other subscales, respectively. In the current study Cronbach alpha coefficient was .85.

The 10-item Connor-Davidson Resilience Scale (CD-RISC-10; Campbell-Sills & Stein, 2007) is a self-report instrument used to measure how individuals cope with stress and adversity. The abridged 10-item version is based on the original 25-items Connor-Davidson Resilience Scale (Campbell-Sills & Stein, 2007; Connor & Davidson, 2003). The scale

has been translated into several different languages, including French, and Haitian Creole. The participants are asked to rate on a five-point scale ranging from 0 to 4, with higher scores suggesting greater resilience. The 10-item version score range from 0 to 40. The 10-item CD-RISC has excellent internal consistency. The Cronbach's alpha was .85, which suggests good reliability. In the current study Cronbach's alpha was .77.

Short Post-Traumatic Stress Disorder Rating Interview (SPRINT; Connor & Davidson, 2001) is a brief and global assessment for PTSD. This instrument is composed of eight self-report items assessing the core symptoms of PTSD. Participants are asked to rate their symptoms on a five-point scale ranging from 0 ("not at all") to 4 ("very much"). The SPRINT demonstrated adequate psychometric properties as its test-retest reliability was $r = .778$ and its internal consistency (alpha) ranged from .77 to .88. In the present study, Cronbach alpha coefficient was .81.

All of the instruments used for this study were translated from English into Haitian Creole. To ensure the reliability/validity of the translated instruments was protected; back-translation method (Bracken & Barona, 1991) was used.

Procedures

This study was approved by the Jackson State University IRB and the Board of the Université d'Haiti Faculte des Sciences Humaines in Haiti. Participants for this study were recruited by personal solicitation from different temporary tents, and schools and universities. Interested participants received a consent form, which explained the purpose of the study, and an assessment package containing the instruments. Consent forms were also verbally explained at the beginning of the study. The data were collected in Port-au-Prince in April 2013, three years after the earthquake.

Data analysis

All statistical analyses were carried out using PASW version 21. A bivariate correlation analysis was carried out in order to examine the relationships between the variables positive religious coping, negative religious coping, active coping strategies, perceived social support, psychological resilience, posttraumatic stress and PTG. Multivariate regression was carried out to determine each factor's contribution to posttraumatic growth.

Results

A bivariate correlation analysis was conducted to investigate the relationships between positive religious coping, negative religious coping, active coping strategies, perceived social support, resilience, PTSD symptoms, age, and PTG (Table 1). The results suggested that there was a significant positive correlation between PTG and resilience ($r = .32, p < .01$), PTSD symptoms ($r = .21, p < .01$), perceived social support ($r = .30, p < .01$), positive religious coping ($r = .40, p < .01$), and active coping ($r = .33, p < .01$). There were also significant positive relationships between perceived social support and resilience ($r = .28, p < .01$); resilience and active coping ($r = .29, p < .01$); PTSD symptoms and negative religious coping ($r = .28, p < .01$) and positive religious coping ($r = .37, p < .01$); positive religious coping and negative religious coping ($r = .39, p < .01$), and active coping ($r = .14, p < .05$).

A multiple regression analysis was calculated to determine if perceived social support, coping strategies, or PTSD were predictors of PTG. A significant regression equation was

Table 1. Intercorrelation between perceived social support, resilience, coping, PTSD symptoms, negative religious coping, positive religious coping, active coping, and PTG.

Variables	PSS	PTG	PR	PTSD	NRC	PRC	AC
1. Perceived Soc. Support (PSS)	–						
2. Posttraumatic Growth (PTG)	.30**	–					
3. Psych. Resilience (PR)	.28**	.32**	–				
4. Posttraumatic Stress (PTSD)	–.07	.21*	–.06	–			
5. Negative Rel. Coping (NRC)	–.07	.10	–.05	.28**	–		
6. Positive Rel. Coping (PRC)	.11	.40**	.01	.37**	.39**	–	
7. Active Coping (AC)	.09	.33**	.29**	.07	.09	.14*	–

* $p < .05$.** $p < .001$ (2-tailed).

found ($F(6,148) = 12.70, p < .001$), with an $R^2 = .34$ (Table 2). The results indicated that the variables (e.g., positive religious coping strategies, active coping strategies, perceived social support, resilience, and PTSD symptoms) accounted for 34% of the variance in PTG. More specifically, positive religious coping was the strongest predictor ($\beta = .31, p < .001$) followed by active coping ($\beta = .21, p < .004$), perceived social support ($\beta = .20, p < .006$), and resilience ($\beta = .20, p < .006$). Posttraumatic stress symptoms ($\beta = .11, p = .10$) and negative religious coping ($\beta = -.54, p = .10$) were not significant predictors of PTG.

Discussion

This study examined the relationships between coping strategies perceived social support, resilience, PTSD symptoms, and PTG for a group of adult survivors of the 2010 Haiti earthquake. The findings from this study partially supported the hypotheses. Specifically, positive religious coping, active coping, and perceived social support were positively associated with PTG. These findings are consistent with previous research that found that positive religious coping (Abu-Raiya et al., 2011; Gerber et al., 2011; Trevino, Archambault, Schuster, Richardson, & Moye, 2012), active coping (Schmidt, Blank, Bellizzi, & Park, 2012); and perceived social support were all related to increased PTG levels (Bozo, Gündoğdu, & Büyüksak-Colak, 2009).

Those who engaged in religious coping were more likely to experience PTG because both positive and negative religious coping embodies the possibility of growth and transformation. Thus, these findings are relevant as they may help explain the importance of positive religious coping, active coping, and social support in dealing with the various types of stress associated with the earthquake in a country where resources are limited. Religion can be very beneficial to the earthquake survivors, especially those with the fewest resources.

Table 2. Summary of multiple regression analysis for variables predicting PTG.

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
Positive Religious Coping	1.02	.25	.31	.001
Perceived Social Support	3.95	1.41	.20	.006
Psychological Resilience	.62	.22	.20	.006
Posttraumatic Stress	.39	.24	.11	.10
Negative Religious Coping	–.23	.31	–.54	.46
Active Coping	2.82	.95	.21	.004

Note: $R^2 = .34$.

Contrary to what we hypothesised, a significant positive correlation was found between resilience and PTG. Our hypothesis was formulated based on previous literature suggesting that highly resilient people are generally less likely to report PTG because they are more likely to utilise more effective coping skills to deal with traumatic events and are less likely to experience long-term effects associated with the trauma or positive changes as a result of trauma (Levine et al., 2008). However, what was found is consistent with Nishi et al. (2010) who believed that some aspects of PTG are forms of resilience. The aforementioned result of this study suggests that people who report experiencing growth over time may become more resilient as a result. Participants who reported high levels of resilience also reported greater levels of PTG. Thus, these individuals survived the earthquake and successfully coped with associated trauma, felt that they were emotionally and psychologically stronger, or had developed new skills as a result of what they went through which would make them more resilient against the effects of future trauma.

Posttraumatic growth was positively associated with PTSD symptoms rather than inversely related as hypothesised. This finding is consistent with previous research that found a positive relationship between PTSD symptoms and PTG (Frazier et al., 2001; Lowe, Manove, & Rhodes, 2013; Morris & Shakespeare-Finch, 2011; Nishi et al., 2010; Wild & Paivio, 2004). Participants in this study who experienced significant PTSD symptoms were more likely to report experiencing higher levels of PTG. One explanation for this finding could be found in Janoff-Bulman's (1992) theory of growth which proposed that significant trauma experiences have the potential of shattering an individual's assumptive worldview to facilitate growth. Individuals who experience trauma may be more likely to challenge fundamental existential questions such as death and the purpose or meaning of life. Tedeschi and Calhoun (1996) used the metaphorical concept of seismic nature to explain the transformative nature of trauma. Like earthquakes can shake the physical environment, traumatic events can produce an upheaval in a survivor's major assumption about the world. Thus, causing the individual to challenge and expand old assumptions which in turn promote growth.

As expected, posttraumatic stress disorder symptoms were positively correlated with negative religious coping. Participants who had high scores on negative religious coping, also reported higher levels of PTSD symptoms. Religious coping often plays a critical role in dealing with major life stressors such as natural disaster, death, loss, and psychological distress. However, some forms of religious coping (positive religious coping) are more beneficial than others (negative religious coping). Traumatic life events have the potential to shake and shatter a person's worldview of religion and spirituality, and can be detrimental to the individual's psychological well-being (Janoff-Bulman, 1989). Individuals who believed that traumatic events were punishment by a higher power and/or believed that they had been forsaken in their time of need (negative religious coping), were more likely to experience PTSD.

Consistent with previous research, perceived social support was negatively correlated with PTSD symptoms (Cluver, Fincham, & Seedat, 2009; Kaniasty & Norris, 2008). Thus, participants who reported higher levels of perceived social support were more likely to report lower levels of PTSD symptoms. Higher levels of perceived social support may decrease the development of PTSD because social support may serve as protection against PTSD. Perceived social support may facilitate increased feelings of safety and strength, and improve positive coping mechanisms as a result.

Positive religious coping, social support, active coping and resilience were predictors of PTG. As expected, positive religious coping was the best predictor of PTG. Contrary to what was expected, active coping was a better predictor of PTG than perceived social support. These results are consistent with previous research (Gerber et al., 2011; Trevino et al., 2012); active coping strategies (Bellizzi & Blank, 2006; Wild & Paivio, 2004; Wolchik, Coxe, Tein, Sandler, & Ayers, 2009) and perceived social support (Hall et al., 2010) are significant predictors of PTG. People who utilise religion as a source of comfort and support (positive religious coping) in times of tragedy and trauma; actively engage in activities to help solve and alleviate their problems (active coping); rely on significant others, friends, and family (social support) to cope with the aftermath of a traumatic event like the earthquake are more likely to experience transformative growth as a result of their experience.

Finally, resilience was found to be a significant predictor of PTG, which is supported by previous research (Chan, Lai, & Wong, 2006), but is contrary to what was predicted. It is likely that resilient individuals employed unique coping strategies to help them cope with the devastation left by the earthquake that resulted in them feeling more empowered and promoted psychological and emotional growth. Surprisingly, PTSD symptoms and negative religious coping were not significant predictors of PTG which is inconsistent with previous research (Gerber et al., 2011; Hall et al., 2010). One possible explanation for this finding is that resilient individuals were more likely to employ other forms of coping mechanisms to deal with the earthquake.

Conclusions

Findings from this study are consistent with previous research that suggested that survivors of natural disasters such as the 2010 Haitian earthquake may experience positive growth as a result of the traumatic experience. There was a significant positive association between positive religious coping, active coping, perceived social support, and PTG, suggesting that the more participants utilised religion, social support, and engaged in active coping strategies, the more likely they were to report growth. Negative religious coping was significantly and positively correlated with PTSD and perceived social support inversely correlated with PTSD. The findings from this study suggest that positive religious coping is the best predictor of PTG followed by active coping, perceived social support, and resilience.

Working with individuals who experience compound trauma, loss, and toxic stress can be a challenging task. This study has several implications for researchers, mental health professionals, governmental agencies, and non-governmental organisations working with the 2010 Haitian earthquake survivors. The findings can be useful in providing insights about the role that religion, coping, resilience, perceived social support (e.g., family, significant other, and friend), and PTG play in helping the earthquake survivors cope in the aftermath of trauma. Our research suggests that posttraumatic growth can enable people to develop ways of thinking and guides for action to meet future demands and challenges, and enhance resilience (Tedeschi & McNally, 2011). Coping with trauma and loss can be a long process for many survivors, especially in a country where the majority of the population is living in poverty. Mental health professionals can assist to explore trauma and loss to promote resilience and PTG in the survivors. Mental health professionals are encouraged to explore the role of religion and/or

spirituality in coping with their trauma and loss. Because of the cultural value placed on storytelling, narrative therapy would be beneficial to help reconstruct their life story. Meichenbaum (2006) stressed the importance of restructuring life narratives in posttraumatic growth. He suggested that storytelling is the cornerstone of this process. Based on the results from this study, religious coping, active coping, and social support are significant predictors of growth among the survivors. Consequently, the government is encouraged to create policy that promotes social, religious, and cultural activities that may have therapeutic benefits for the survivors. Church leaders, including vodou priests, are encouraged to serve in the role of healer and helper in the aftermath of the earthquake. They can be trained to provide culturally sensitive and indigenous mental health services in a country where there is a scarcity of mental health professionals.

Limitations and Directions for future research

The study presents several limitations. This study used a quantitative and correlational research design. Because the study used a correlational design to explore the relationships between the psychosocial, psychological, and posttraumatic growth factors among the survivors, no causal relationships could be drawn. Although the sample size in this study was adequate, no generalisation could be made due to possible sample selection bias, as most of the participants were college students. Participants were assessed only once three years following the earthquake. A longitudinal research design may be beneficial to investigate the relationships among the variables of interest because it would allow the researcher to look at changes over time. The instruments used in this study provided quantitative data. A mixed research design (e.g., quantitative and qualitative) would have been more suitable for this study based on cultural factors that suggest that Haitians value storytelling. Another limitation of the study is that it did not include a measure to assess the influence of specific cultural factors on the PTG of the survivors. The instruments used in this study were translated into Creole, the mother tongue of Haitians, and were not normed on that population. Although the instruments were back translated to ensure that validity and reliability were protected, some American concepts translated into Creole may not have been fully understood by the survivors. Future research may explore how culture-specific factors (e.g., vodou, sorry telling, and proverbs) contribute to the posttraumatic growth of the earthquake survivors using mixed method research designs. Future research may also investigate the role of spirituality in predicting PTG among the survivors. Finally, researchers may explore the validation and psychometric performance of the measures used in this study with the Haitian population.

Disclosure statement

No potential conflict of interest was reported by the authors.

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