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Cross-National and Religious Relationships With Posttraumatic Growth: The Role of Individual Differences and Perceptions of the Triggering Event

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Abstract

Posttraumatic growth (PTG)—positive changes experienced as a result of psychological struggle with highly challenging life circumstances—generally correlates with greater religiosity and optimism, and often shows gender and cross-national differences. The current study examined the relationship of national background and religion with PTG, as well as individual differences variables (i.e., optimism, pessimism, and gender) and individuals' appraisal or perceptions of the event (i.e., whether the event was perceived as having a direct or indirect impact, and whether the event was perceived as deliberate or accidental). American and Japanese college students identified a highly stressful life event and completed the PTG Inventory and the revised Life Orientation Test. Results showed that national background and religiosity (religious affiliation and strengths of religious beliefs) predicted the level of overall PTG. In addition to the national and religious associations, gender and optimism had positive associations with PTG. The role of individual differences variables and perceptions of the triggering event varied cross-nationally across the PTG domains. Limitations and future directions are discussed.

Keywords

posttraumatic growth, nations, religion, optimism, gender

A growing body of cross-cultural studies reveals that people in different cultures perceive and respond to stressful life events differently (e.g., Chun, Moos, & Cronkite, 2006; Kuo, 2011, for reviews). Although much research has studied the negative consequences of and coping responses to stressful life events, such as loss, suffering, and crisis, the possibilities for experiencing personal growth—positive psychological changes following exposure to highly challenging life circumstances—have received considerable attention since the 1990s (e.g., Tedeschi & Calhoun, 2004, for review). This type of psychological change is referred to as *Posttraumatic growth*

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(PTG) and is defined as positive changes experienced resulting from the psychological struggle with a highly stressful or challenging life event (Tedeschi & Calhoun, 1996, 2004). As opposed to posttraumatic stress disorder (PTSD), a diagnosis based on the established criteria that require severe psychological and physical symptoms resulting from experiencing a "trauma" as prescribed by *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994), PTG does not require a trauma that would meet the A1 criterion of PTSD symptoms as a triggering event to be experienced (Tedeschi & Calhoun, 2004).

PTG has been observed and reported as a result of a wide range of highly challenging life circumstances, from exposure to terrorism (e.g., Steger, Frazier, & Zacchanini, 2008) to highly stressful life events such as death of a loved one (e.g., Currier, Mallot, Martinez, Sandy, & Neimeyer, 2013). Previous studies suggest that PTG can occur in multiple domains that include having a greater sense of personal strength or self-reliance, developing a new path and opportunity, increased compassion and a feeling of closeness in relationships, deeper sense of spirituality and having a better understanding of religious and spiritual matters, and more appreciation of life (Tedeschi & Calhoun, 1996).

As systematic research on PTG increases, the complexity of identifying the multiple predictors of PTG has become evident (e.g., Prati & Pietrantoni, 2009; Zoellner & Maercker, 2006, for review) and the theoretical model describing the psychological process leading to PTG has been elaborated and refined accordingly (Calhoun & Tedeschi, 2006; Calhoun, Cann, & Tedeschi, 2010). One key element that the PTG model contains to explain the PTG processes is the socio-cultural factors. Although the model assumes that the socio-cultural factors, such as national background or religions, could play a significant role in shaping the experience of personal growth, little is known about the influence of the religious and national background of people who experienced a highly stressful life event on PTG.

Although the PTG phenomenon has been observed and documented in many countries (e.g., Weiss & Berger, 2010), such as China (Ho, Chu, & Yiu, 2008), Germany (Zoellner, Rabe, Karl, & Maercker, 2008), and India (Thombre, Sherman, & Simonton, 2010), several researchers have suggested that PTG, as it is currently conceptualized and assessed, might be strongly associated with Western culture, because it was initially conceptualized and developed within the Western cultural framework (Splevins, Cohen, Bowley, & Joseph, 2010). However, even within the Western countries, some cross-national differences have been revealed. Shakespeare-Finch and Copping (2006), for example, found that a more expansive compassion dimension is one of the culture-specific characteristics for people in Australia. Compassion has been incorporated into PTG as a part of the *Relating to Others* domain in the PTG Inventory (PTGI), one of the most frequently used instruments for assessing PTG (Tedeschi & Calhoun, 1996). However, compassion in the PTGI is assumed to be associated with developing stronger bonds in existing relationships; whereas compassion as found in the Australian sample reflected a personal philosophy and did not necessarily relate to strengthening existing relationships (Shakespeare-Finch & Copping, 2006). A study using the PTGI in an Australian sample, in fact, found through an exploratory factor analysis that the single compassion item on the PTGI loaded more strongly on the *Appreciation of Life* factor, rather than *Relating to Others* factor (Morris, Shakespeare-Finch, Rieck, & Newbery, 2005).

Another example of potential national differences within the Western cultures was shown in studies conducted with people in Germany (Zoellner et al., 2008). The overall means of the PTGI were quite low in their sample (i.e., motor vehicle accident survivors in Germany), in comparison with the results of the other studies targeting Americans. In fact, the literature on the cross-national comparisons in PTG has revealed that Americans tend to report higher levels of PTG than people in other countries, including Australia (Morris et al., 2005), Spain (Steger et al., 2008), and Japan (Taku, Cann, Tedeschi, & Calhoun, 2009). The relatively higher reports of PTG observed among Americans has been, thus far, discussed as a part of the unique role of "American"

culture in PTG, such as the American attitudes toward seeking positives out of deteriorating events (Zoellner et al., 2008) and valuing self-enhancement (Steger et al., 2008), together with the stronger presence of the Positive Psychology movement (Norem & Chang, 2002).

However, little is known about the factors underlying these findings, partly because there is little research that directly compares PTG across nations, even though many studies that were conducted outside the United States using translated versions of the PTGI collectively converge on the common finding of lower PTGI scores when compared with American counterparts. The current study investigates how religion and national background may relate to PTG and how individual differences variables (i.e., optimism, pessimism, and gender) and individuals' appraisal or perceptions of the event (i.e., whether the event was perceived as having a direct impact or indirect impact, and whether the event was perceived as deliberate or accidental) that are often considered to be relevant factors in models of the PTG process may play a role in determining the level of PTG across two nations.

Religion and PTG

A current PTG model (e.g., Calhoun et al., 2010) depicts a variety of elements that are likely to play a role in determining the degree of PTG experienced. One such variable, usually seen as a characteristic of the person's belief system, is religion. Most of the world's religions, such as Christianity, Hinduism, Islam, Judaism, and Buddhism, view suffering, in some form, as having an important role in personal growth and the development of profound wisdom (see Shaw, Joseph, & Linley, 2005; Tedeschi & Calhoun, 2004, for reviews). However, the studies examining PTG have revealed that the role of religion in the PTGI scores among Americans is somewhat different from that found in other countries (e.g., Shakespeare-Finch & Copping, 2006). This difference has been observed as a lower score on the *Spiritual Change* domain of the PTGI among non-Americans (e.g., Morris et al., 2005; Taku et al., 2007). The suggestion is that PTG may not be commonly manifested or verbally reported as a spiritual or religious form, in a narrow sense, in places where organized religion is less emphasized, such as Australia and Japan, whereas it is likely to be experienced as being tied with religion in the United States (Calhoun et al., 2010).

Although much cross-cultural research has used "nation" as an indicator of culture, religious affiliation and strength of religious beliefs can also be a cultural component (Hays, 1996). Because nation and religions are often closely related, it is plausible that the previous findings on the cross-cultural (i.e., national) differences are partly explained by the role of religious affiliation or strength of religious beliefs in each country. Literature has revealed positive associations between PTG and religiosity, as measured by the importance of religion and/or religious participation (e.g., Helgeson, Reynolds, & Tomich, 2006; Prati & Pietrantoni, 2009; Shaw et al., 2005, for reviews). However, the majority of the studies that found positive associations between religiosity and PTG were conducted with predominately American samples (e.g., Milam, 2004; Schultz, Tallman, & Altmaier, 2010), and little research has been done with Asian populations with different religious traditions, including Buddhists. Below, we will identify other variables that have been shown to predict PTG that will also be examined in this study.

Optimism, Pessimism, Gender, and PTG

According to current PTG models (Calhoun et al., 2010; Calhoun & Tedeschi, 2006), certain personality qualities such as optimism affect the likelihood people experience PTG. Dispositional optimism refers to the way a person approaches the world and is defined as an individual's generalized expectancies of the occurrence of good outcomes in one's life (Scheier & Carver, 1985). "Most optimists presumably derive their sense of optimism from a history of successes, in which they have demonstrated their own personal mastery over difficult situations" (Scheier &

Carver, 1985, p. 229). Because people who expect good outcomes—those who have a more optimistic personality—are likely to stay involved in the struggle even when things are difficult (Carver & Scheier, 2002), it is reasonable that optimism positively correlates with PTG. Several studies (e.g., Helgeson et al., 2006; Milam, 2004; Tedeschi & Calhoun, 1996) have supported this notion; however, the size of their zero-order correlations was only moderate to weak. A meta-analytic review (Bostock, Sheikh, & Barton, 2009) revealed that the relationships between PTG and optimism were equivocal; 4 out of 12 studies showing a positive linear relationship, 4 showing no association, and the remaining 4 showing ambiguous findings. Given the logical validity of the assumption that dispositional optimism should be linked to PTG, these results seem surprising.

One possible reason for the inconsistent findings is the different roles optimism and pessimism might play in PTG. Although Scheier and Carver (1985) initially conceptualized optimism as being a bipolar trait, with optimism at one end and pessimism at the other, others have questioned whether optimism and pessimism are bipolar opposites or constitute distinct constructs (e.g., Kubzansky, Kubzansky, & Maselko, 2004). A few studies have investigated the potentially distinct role of optimism and pessimism in PTG (e.g., Milam, 2004); however, the majority of the PTG studies have only focused on optimism as a whole (e.g., Bozo, Gündoğdu, & Büyükaşik-çolak, 2009). Also, another possible reason for the inconsistent findings is possible cross-national differences. There have been reports that pessimism may be a good marker to understand cross-national differences (Abdel-Khalek & Lester, 2006; Araki, 2008) and that greater individualism is associated with greater optimism (Fischer & Chalmers, 2008).

A meta-analytical review has revealed that women tend to report higher PTG than men (Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010). In an effort to assess cross-national differences in the role of gender in PTG, they also examined the effect of the language used in the measurement of PTG (English vs. non-English versions) and found that language was not a moderator in explaining gender differences in PTG. However, due to the small number of studies using translated versions of the PTGI, the non-English measurements in their review mixed a variety of languages (e.g., Chinese, Germany, and Turkish). Because several studies on PTG in Asian countries, including Chinese (Ho, Chan, & Ho, 2004; Ho et al., 2008) and Japanese (Shigemoto & Poyrazli, 2013; Taku et al., 2007), reported no significant gender differences, it remains possible that gender differences in PTG may vary across nations.

Individual's Subjective Perceptions of the Event and PTG

PTG is predicted to occur as a result of a psychological attempt to come to new understandings of oneself and the world that may result from the experience of serious challenges to one's core beliefs (Cann et al., 2010). Challenges to core beliefs are more likely to happen when the event is perceived as having a direct impact, rather than indirect impact. Kamibeppu and her colleagues (2010), for example, found a greater level of PTG in cancer survivors than their siblings. So even though both the patient and the sibling experienced some growth, PTG was greater when the event was experienced directly. Research on self-referencing effects suggests that when we are directly affected by an experience, we engage in much greater effort to understand the event (Rogers, Kuiper, & Kirker, 1977). Interestingly, there has been some evidence that self-referencing effects may vary across cultures (Wagar & Cohen, 2003), which in turn is likely to influence the level of PTG. Another factor that is likely to affect PTG is whether the event was perceived as accidental or deliberate. If an event was perceived as deliberate, rather than accidental, then it may be more challenging to one's core beliefs, which is also likely to influence the PTG. Thus, considering the subjective appraisal or perceptions of the triggering event is important when examining the predictors for PTG.

PTG Domains Versus PTG Total

Finally, little research has been conducted to examine the impact of these factors (i.e., nation, religious affiliation, religious beliefs, individual differences factors, and individual's perceptions of the event) on the sub-domains of PTG. The majority of the studies, thus far, only focused on the PTGI total score. Although the five domains of the PTGI have been shown to be inter-correlated (e.g., Morris et al., 2005; Tedeschi & Calhoun, 1996), several researchers have indicated that the PTGI domains may have distinct features (e.g., Taku, 2011; Tedeschi & Calhoun, 2004) and should be examined separately, especially in cross-cultural studies (Joseph, 2011; Taku, 2013).

Present Study

This study has three sets of research hypotheses.

Hypothesis 1: Nation and religion (i.e., religious affiliation and strength of religious beliefs) will be related to the level of overall PTG. American participants are expected to report higher levels of overall growth than Japanese participants. Strength of religious belief would be expected to positively relate to the overall PTG. And those who report a religious affiliation should report higher levels of overall growth than those with no religious affiliation.

Hypothesis 2: Nation and strength of religious beliefs will contribute to overall PTG, above and beyond the contribution of individual differences variables (i.e., optimism, pessimism, and gender) and individual's perceptions of the triggering event (i.e., whether the event was perceived as having a direct impact or indirect impact, and whether the event was perceived as deliberate or accidental). It is expected that national background and strength of religious beliefs would explain overall PTG significantly even after controlling for these variables.

Hypothesis 3: The role of individual differences variables and individuals' perceptions of the triggering event in PTG will vary across PTG domains in the American and Japanese samples. We expect that (a) higher optimism and perceiving the event as having a direct impact would be significantly correlated with greater growth in the American and Japanese samples. However, (b) differences between nations are expected for the role of gender, with gender playing a significant role in all PTG domains in the American sample, but gender may not play a significant role in PTG domains in the Japanese sample, in line with the literature (e.g., Ho et al., 2004; Ho et al., 2008; Shigemoto & Poyrazli, 2013; Taku et al., 2007). With respect to the separate PTG domains, we expect (c) stronger religious beliefs to predict growth in the *Spiritual Change* domain only in the American sample. However, because this is the first study that evaluates these variables in the two countries separately, further specific hypotheses for each of the PTG domain cannot be clearly identified.

Method

Participants

American sample. The American participants were recruited from a departmental research participant pool at a state university in the Midwestern United States. Four hundred sixty-four college students (345 female, 119 male) participated in the study. Their ages varied between 18 and 57 years (M = 19.73 years, SD = 3.35 years). By applying the z score transformation, 10 participants ranging from 31 (Z = 3.36) to 57 years old (Z = 11.12) were excluded from the following analyses due to their ages being outliers within this sample. The rest of the sample ranged from 18 to 30 years (M = 19.36 years, SD = 1.90 years). Of 454 participants (337

Table 1. Demographic Characteristics in the American and the Japanese Samples.

	American sample (n = 430)	Japanese sample (n = 220)
Age, *M* (*SD*), years	19.33 (*SD* = 1.88)	19.91 (*SD* = 1.05)
Gender, *n*	109 males; 321 females	79 males; 141 females
Marital status, %	98.4% single; 0.2% married; 0.9% divorced or separated; and 0.5% other	100% single
Ethnicity, %	79.3% Caucasian; 9.5% African American; 11.2% other minority (e.g., Hispanic, Asian American, Arabic)	100% Japanese
Religious affiliation, %	81.6% Christian (42.8% Catholic; 6.0% Protestant; 32.8% other Christian, such as Methodist, Lutherans, Baptist) 15.7% non-religious (13.3% non-religious; 1.7% Atheist or Agnostic; 0.7% other minority such as Spiritual) 1.6% other minority (e.g., Islam, Hindu, Buddhism) 1.2% no answer	59.6% Buddhism (54.1% Buddhism; 5.5% other Buddhism, such as Tenri-kyo, combination of Buddhism and Shintoism) 35.5% non-religious 2.7% other minority (e.g., Christian) 2.3% no answer
Strengths of religious beliefs, *M* (*SD*)	2.60 (*SD* = 0.91)	3.56 (*SD* = 0.64)
Type of event experienced, %	21.6% Family issues (e.g., parents divorced); 21.4% death of someone close; 16.7% romantic relationship problems; 10.7% accident, injury, or serious illness; 5.1% financial or work/career-related issues; 5.1% move residence; 5.1% friendship problem; 14.3% other (e.g., natural disaster; assault, bullying, abuse, or academic problem)	20.9% Serious academic problems (e.g., failure on a university entrance examination); 18.2% romantic relationship problems; 16.8% death of someone close; 12.3% bullying, abuse, or friendship problems; 8.6% family issues; 7.7% accident, injury, or serious illness; 15.5% other (e.g., natural disaster, and financial issues)
Perceived stressfulness, *M* (*SD*)	6.08 (*SD* = 1.12)	5.79 (*SD* = 1.35)

female, 117 male), 94.7% indicated that they experienced at least one highly stressful life event within the past 5 years and identified one "most traumatic or stressful" event as a focal event (see Table 1 for additional demographic information). Those who did not experience any stressful life event (n = 24, 5.3%) were excluded. The resulting final sample size consisted of 430 participants.

Japanese sample. The Japanese participants were recruited from introductory psychology courses at a suburban university in the Southern part of Japan. Two hundred eighty-two college students (169 female, 113 male), with a mean age of 19.91 years (*SD* = 0.99 years), ranging from 18 to 27 years, participated in the study. Seventy-eight percent indicated that they experienced at least one highly stressful life event within the past 5 years and chose the single "most traumatic or stressful" event as a focal event. Those who did not experience any stressful life event (n = 62, 22.0%) were excluded. The resulting final sample size consisted of 220 participants (see Table 1 for additional demographic information).

Measures

PTG. PTG was measured using the 21-item PTGI (Tedeschi & Calhoun, 1996; Japanese translation, PTGI-J: Taku et al., 2007). The PTGI-J was developed using standard methods of translation, back-translation, and revision, to achieve the greatest possible semantic, linguistic, and content equivalence to the original PTGI and has been tested in several studies with Japanese population (e.g., Taku et al., 2007; Taku, 2011, 2013). Good reliability (i.e., internal consistency) has been demonstrated for both PTGI and PTGI-J. In addition, the test–retest reliability as well as concurrent, discriminant, and construct validity have been demonstrated for the PTGI with the American sample (Tedeschi & Calhoun, 1996). The PTGI assesses five domains (i.e., *Relating to Others, Personal Strength, New Possibilities, Spiritual Change*, and *Appreciation of Life*) that have been found by an exploratory factor analysis with the American sample (Tedeschi & Calhoun, 1996) and validated by confirmatory factor analyses with the American sample (e.g., Taku, Cann, Calhoun, & Tedeschi, 2008). Participants indicated on a 6-point scale, from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*), the degree to which they experienced each of 21 changes as a result of the most stressful life event that they had identified. The internal consistencies in the current American and Japanese samples were $\alpha = .92$ and .90 for the total, $\alpha = .87$ and .82 for the 7-item *Relating to Others*, $\alpha = .78$ and .78 for the 4-item *Personal Strength*, $\alpha = .81$ and .83 for the 5-item *New Possibilities*, $\alpha = .87$ and .46 for the 2-item *Spiritual Change*, and $\alpha = .76$ and .54 for the 3-item *Appreciation of Life*, respectively. Due to the low alpha for the latter two subscales in the Japanese sample, the combined subscale (*Spiritual Change* and *Appreciation of Life*) that has been identified with a Japanese sample by an exploratory factor analysis of the PTGI-J (Taku et al., 2007) was used ($\alpha = .61$) when investigating the regression model to test the third hypothesis.

Optimism and pessimism. Dispositional optimism and pessimism were assessed by the Revised Life Orientation Test (LOT-R: Scheier, Carver, & Bridges, 1994; Japanese translated version: Sakamoto & Tanaka, 2002). The LOT-R has 10 items, but 4 items are non-scored filler items. Participants were asked to indicate the extent of agreement with each of the items, ranging from 1 (*I disagree a lot*) to 5 (*I agree a lot*). LOT-R has been shown to have a satisfactory level of reliability and validity (Scheier et al., 1994) and is the most commonly used scale for measuring optimism and pessimism. As Carver and Scheier (2001) showed the bi-dimensionality of the LOT-R, we divided the scale into optimism (3 items) and pessimism (3 items). Cronbach's alphas in the current samples were $\alpha = .68$ (American) and .61 (Japanese) for optimism and $\alpha = .81$ (American) and .64 (Japanese) for pessimism.

Religions. Participants were asked to choose their religious affiliation from a list of 12 categories: Catholic, Protestant, Other Christian, Islam, Hindu, Buddhism, Shinto, Tenri-kyo, Non-religious, Agnostic or Atheist, Spiritual, or Other. If participants chose "Other Christian" or "Other," then, they were asked to provide more detail. The responses included Baptists, Jewish, Methodists, Lutherans, Presbyterians, and Orthodox churches. All participants also rated the strength of their religious beliefs on a 4-point scale, from 1 (*I am strongly religious*), 2 (*I am religious*), 3 (*I am a little religious*), and 4 (*I am not religious at all*).

Subjective perceptions of the triggering events. Individuals' appraisals of the triggering events were assessed in the following three aspects. First, participants were asked to rate the perceived stressfulness of the event at the time it was experienced using the 7-point scale (1 = *not at all stressful* to 7 = *extremely stressful*). Second, participants indicated whether the event that they identified as "most traumatic or stressful" within the past 5 years happened directly or indirectly to them.

Third, participants indicated whether they considered the event as something that happened accidentally or deliberately.

Procedure

After explaining the purpose of the study and obtaining informed consent, the survey was completed in small group settings (10-20 people) in the United States and Japan. Participants were all undergraduate students enrolled in introductory psychology courses. American participants received partial credit toward course requirements as compensation for their participation. Japanese participants did not receive any compensation. Prior to completing the PTGI and LOT-R, participants provided demographic information, identified their religious affiliation, and rated their religious strength. They then indicated whether they had experienced any stressful life event in the past 5 years by choosing from a list of 13 different life events (e.g., accident, injury, serious illness, death of someone close, relationship issues, and natural disaster), which has been used in other cross-cultural studies (e.g., Taku et al., 2007). Those who reported that they experienced two or more events identified the single "most traumatic or highly stressful" event to serve as the focus when responding to the questions regarding the subjective perceptions of the event and responding to the PTGI items.

The order of presentation of the measures was counterbalanced, depending on whether the subjective perceptions of the triggering event were assessed before the PTGI or not and whether LOT-R was presented first or last. The survey required approximately 30 min to complete. The study was approved by the institutional review board at the participating universities. A report based on a part of these data was published in describing the men's perceptions of indicators of growth (Taku, 2013) and the relationships between the commonly defined and individually defined PTG (Taku, 2011).

Results

Hypothesis 1: Roles of Nation and Religions in PTG

First hypothesis was that nation and religion (i.e., religious affiliation and strength of religious beliefs) would be related to the level of overall PTG. To test this hypothesis, the three religious categories (i.e., Christianity, Buddhism, and non-religion) were created. Christians (n = 342) include those who identified their religious affiliations as Catholic, Protestant, or other Christian (e.g., Methodist, Lutherans, Baptist). Buddhists (n = 128) include those who identified themselves as Buddhists, other Buddhism (e.g., Tenri-kyo), or the combinations of Buddhism and Shintoism. Non-religious people (n = 141) include those who identified their religious affiliation as non-religious, atheist, agnostic, or spiritual. A 2 (United States and Japan) × 3 (Christianity, Buddhism, and non-religion) ANOVA was conducted on the total PTGI scores. The main effect of nation yielded a significant result, $F(1, 605) = 4.43$, $p < .05$, revealing that American participants reported higher PTGI total scores (M = 53.98, SD = 21.61) than did the Japanese participants (M = 44.74, SD = 20.25), supporting the hypothesis. The main effect of religious affiliation was not significant, $F(2, 605) = .75$, n.s., contrary to prediction. The interaction effect was also not significant, $F(2, 605) = .65$, n.s.

Next, multiple regression analysis was conducted by using dummy coding of religious affiliation to examine not only the role of nation and religious affiliation but also the role of strengths of religious beliefs in the PTGI total scores. The results indicated that the set of predictors explained 5.0% of the variance, adjusted $R^2 = .04$, $F(4, 603) = 7.95$, $p < .001$, showing that nation ($\beta = -.17$, $p < .05$) and religious strength ($\beta = -.11$, $p < .05$) predicted the PTGI total score. Being

an American and having a stronger religious belief were associated with higher PTG, supporting our hypothesis.

Hypothesis 2: Roles of Nation and Religious Strength in PTG After Controlling for the Other Variables

The second hypothesis was that nation and strength of religious beliefs would contribute to overall PTG, above and beyond the contribution of individual differences variables (i.e., optimism, pessimism, and gender) and individual's perceptions of the triggering event (i.e., whether the event was perceived as having a direct impact or indirect impact, and whether the event was perceived as deliberate or accidental). As a religion-related factor, only strength of religious belief was included in the model, because the religious affiliation and nation are likely to be confounded. That is, the chi-square test revealed that religious affiliation was not evenly distributed between the United States and Japan, χ^2 (2) = 441.57, $p < .001$. Majority of the American sample (83.4%) were Christians, 15.9% were non-religious, and only 0.7% ($n = 3$) were Buddhists, whereas 61.5% of the Japanese sample were Buddhists, 36.6% were non-religious, and only 1.9% ($n = 4$) were Christians.

A hierarchical regression analysis was performed to test the second hypothesis. The subjective perceptions of the triggering event (i.e., whether the event was perceived as having a direct impact or indirect impact, and whether the event was perceived as deliberate or accidental) and the individual differences variables (i.e., gender, optimism, and pessimism) were entered first. All of the continuous predictors were linearly transformed by subtracting the mean from each variable to reduce the multicollinearity issues. In the second step, nation and religious strength were entered into the model. The overall model explaining the PTGI total score for the first step was significant, $F(5, 560) = 12.17$, $p < .001$, $R^2 = .10$. Addition of the nation and religious strength improved prediction (F change = 7.36, $p < .01$. R^2 change = .02, $p < .01$). In the resulting final model, $F(7, 558) = 10.99$, $p < .001$, $R^2 = 12$, the strongest predictor was gender ($\beta = .19$, $p < .001$), followed by optimism ($\beta = .18$, $p < .001$) and religious strength ($\beta = -.10$, $p < .05$). Nation variable was marginally significant ($\beta = -.10$, $p < .06$). That is, being a woman, higher optimism, stronger religious belief, and possibly being American were associated with higher levels of PTG, demonstrating that the second hypothesis was supported.

Hypothesis 3: Roles of Subjective Perceptions of the Event and Individual Differences Variables in PTG Domains in the American and Japanese Samples

Third hypothesis was that the role of individual differences variables and individuals' perceptions of the triggering event in PTG will vary across nations and PTG domains. Prior to testing the hypotheses, descriptive statistics were evaluated. A nation-level analysis showed that there are cross-national differences in the level of optimism and pessimism; American participants were more optimistic ($M = 2.56$; $SD = 0.88$) and less pessimistic ($M = 1.61$, $SD = 0.98$) than Japanese participants ($M = 1.95$, $SD = 0.78$; $M = 1.93$, $SD = 0.73$), $t(642) = 8.71$, $p < .001$, and $t(642) = -4.18$, $p < .001$, respectively. Because the PTGI domains were not equivalent across nations, a series of multiple regression analyses were performed to test the following set of hypotheses: (a) higher optimism and perceiving the event as having a direct impact would be significantly correlated with greater growth in the American and Japanese samples; (b) gender would play a significant role in all PTG domains in the American sample, whereas gender would not play a significant role in PTG domains in the Japanese sample; and (c) stronger religious beliefs would predict growth in the *Spiritual Change* domain only in the American sample. Significance of the predictors was set at $p < .01$ to reduce experiment-wise Type I error.

Table 2. Multiple Regression Analysis Predicting the PTGI Domains in the American Sample.

	Relating to Others	New Possibilities	Personal Strength	Spiritual Change	Appreciation of Life
Gender	.16**	.11*	.19***	.06	.15**
Optimism	.15*	.07	.19**	.04	.03
Pessimism	−.01	−.01	−.03	−.03	−.01
Directly or indirectly	.14**	−.05	−.05	.06	.18***
Accidental or not	−.17**	.16**	.09	−.09*	−.10*
Religious strength	−.02	−.01	−.05	−.51***	−.03
R^2	.11***	.05**	.10***	.28***	.08***
Adjusted R^2	.10	.03	.09	.27	.06

Note. PTGI = Posttraumatic Growth Inventory. Each categorical variable was coded as follows: gender (0 = male, 1 = female), whether the event was perceived as directly or indirectly impacted (0 = directly, 1 = indirectly), and whether the event was perceived as accidental or deliberate (0 = accidental, 1 = deliberate).
*p < .05. **p < .01. ***p < .001.

In the American sample, the overall model explaining the *Relating to Others* PTG domain was significant, $F(6, 386) = 8.12$, $p < .001$, $R^2 = .11$, adjusted $R^2 = .10$. As shown in Table 2, subjective perceptions of the triggering event and gender were the significant predictors. That is, being female, the event being perceived as accidental, and the event being perceived as something that happened indirectly to them were associated with higher level of growth in this domain. The model explaining the *New Possibilities* domain was also significant, although R^2 was rather small, $F(6, 383) = 3.28$, $p < .01$, $R^2 = .05$, adjusted $R^2 = .03$. Unlike the *Relating to Others* domain, those who perceived the event happening deliberately reported greater growth in this domain. The model explaining the *Personal Strength* was significant as well, $F(6, 384) = 7.05$, $p < .001$. $R^2 = .10$, adjusted $R^2 = .09$. Compared with the other models, none of the subjective perceptions of the triggering event were associated with the growth scores in this domain. Only individual differences variables (gender and optimism) were significant predictors. The model for the *Spiritual Change* showed the highest coefficient of determination, $F(6, 388) = 26.67$, $p < .001$, $R^2 = .28$, adjusted $R^2 = .27$, indicating that the strength of religious beliefs was strongly associated with the growth scores in this domain. Finally, the model for *Appreciation of Life* also explained significant variance, $F(6, 386) = 5.29$, $p < .001$, $R^2 = .08$, adjusted $R^2 = .06$. Subjective perceptions of the event and gender significantly predicted the growth scores. Being female and the event being perceived as something that happened indirectly to them were associated with higher levels of growth in this domain.

In the Japanese sample, the model for the *Relating to Others* was significant; however, the coefficient of determination was rather small, $F(6, 196) = 2.53$, $p < .05$, $R^2 = .07$, adjusted $R^2 = .05$. As seen in Table 3, optimism was the only significant predictor. As with the American sample, higher optimism was associated with higher level of growth in this domain. The model for the *New Possibilities,* $F(6, 197) = 7.14$, $p < .001$, $R^2 = .18$, adjusted $R^2 = .16$, showed that the subjective perceptions of the event, in addition to optimism, significantly explained the growth scores. Those who perceived the event happening directly reported greater growth in this domain. The model for the *Personal Strength,* $F(6, 197) = 6.22$, $p < .001$, $R^2 = .16$, adjusted $R^2 = .14$, indicated that being female and higher optimism were associated with higher growth in this domain. Finally, the model for the culture-specific combined factor (*Spiritual Change* and *Appreciation of Life*) also yielded a significant result, $F(6, 197) = 4.81$, $p < .001$, $R^2 = .13$, adjusted $R^2 = .11$. The only significant predictor was the subjective perception of the event. In contrast to the model for *New Possibilities*, those who perceived the event happening indirectly

Table 3. Multiple Regression Analysis Predicting the PTGI Domains in the Japanese Sample.

	Relating to Others	New Possibilities	Personal Strength	Spiritual Change and Appreciation of Life
Gender	.15*	.08	.27***	.13
Optimism	.22**	.27***	.21**	.11
Pessimism	.03	.11	.03	.09
Directly or indirectly	.00	−.23**	−.17*	.28***
Accidental or not	−.04	.17*	.07	−.06
Religious strength	.06	.04	−.03	−.09
R^2	.07*	.18***	.16***	.13***
Adjusted R^2	.05	.16	.14	.11

Note. PTGI = Posttraumatic Growth Inventory. Each categorical variable was coded as follows: gender (0 = male, 1 = female), whether the event was perceived as directly or indirectly impacted (0 = directly, 1 = indirectly), and whether the event was perceived as accidental or deliberate (0 = accidental, 1 = deliberate).
*p < .05. **p < .01. ***p < .001.

reported greater growth. Unlike the American sample, the strength of religious beliefs did not significantly predict any of the PTG domains in the Japanese sample. In all models (Table 2 and 3), the variance inflation factor (VIF) for predictors ranged from 1.01 to 1.49 for the American sample and from 1.03 to 1.28 for the Japanese sample, indicating that multicollinearity was not an issue in these analyses.

In sum, Hypothesis (a) was partially supported, with optimism and subjective perceptions of the event related to some PTG domains, but not all. Hypothesis (b) was also partially supported, with gender significantly correlated with PTG domains in the American sample, except for the *New Possibilities* and *Spiritual Change* domains; however, contrary to our hypothesis, significant gender differences emerged in the *Personal Strength* domain in the Japanese sample. Hypothesis (c) was supported.

Discussion

The current study investigated nation and religiosity as separate predictors of PTG. To our knowledge, this is the first cross-national study investigating the links between nation and religious strength and PTG while controlling for the subjective perceptions of the triggering event and individual differences variables. The first hypothesis was that nation and religion (i.e., religious affiliation and strength of religious beliefs) would explain the levels of overall PTG experienced, and it was supported, in that both nation and religiosity were related to overall growth. American participants reported higher PTG than Japanese participants, consistent with previous research (e.g., Shigemoto & Poyrazli, 2013; Taku et al., 2009). The low score among Japanese participants is also consistent with the existing literature (e.g., Kamibeppu et al., 2010). Several researchers suggest that it is possible that people in the United States might feel more social pressure to report having growth from adversity than people in other countries (e.g., Zoellner et al., 2008). Future studies should examine what elements of American national background specifically influence perceived PTG.

Several studies have suggested that the religious affiliation (i.e., being affiliated with a Christian faith) may play a significant role in PTG (e.g., Proffitt, Cann, Calhoun, & Tedeschi, 2006; Trevino, Archambault, Schuster, Richardson, & Moye, 2012); however, the current study did not yield a significant difference in the level of PTG among Christians (i.e., Catholic, Protestant, and other Christian), Buddhists, and non-religious people. Instead, the strength of

religious beliefs significantly predicted the PTGI score in the current study, which supported our hypothesis and confirms previous studies (e.g., Kleim & Ehlers, 2009). As noted by Shaw et al. (2005), one possible reason why religiosity has been identified as a consistent predictor of PTG is because it may lead to increased social support, which in turn may provide the sense of meaning, purpose, and coherence for people who experienced a highly stressful life event. To clarify the roles of religiosity, social support, and an enhanced sense of coherence, more systematic cross-national, as well as cross-cultural, studies are needed.

The second hypothesis was that nation and strength of religious beliefs would contribute to overall PTG, over and above the role of individual differences variables and individuals' subjective perceptions of the triggering event. The model was significantly improved by adding the nation and religious strength variables, supporting this hypothesis. The model also showed that gender (i.e., being a woman) and higher optimism were associated with higher growth. The role of gender was consistent with the literature (e.g., Vishnevsky et al., 2010). Although studies applying meta-analysis have provided mixed findings about the impact of optimism (Bostock et al., 2009), the current study showed a positive impact of optimism on the overall PTG; however, pessimism did not play a significant role in predicting PTG in our samples.

As systematic research on PTG has accumulated, it has become clear that there may be various pathways to PTG and that the separate domains of growth may occur distinctively in some populations or due to different types of stressful life experiences (Tedeschi & Calhoun, 2004). One way to extend the research in this direction is to examine each domain of PTG across different nations. The third hypothesis was that the role of individual differences variables and individuals' perceptions of the triggering event in PTG will vary across PTG domains in the American and Japanese samples.

In the American sample, the results for the PTG domains provided mixed support for our hypotheses. As hypothesized, gender and the event being perceived as accidental predicted the level of growth in the *Relating to Others* domain; however, contrary to our hypothesis, the subjective perceptions of the event as something that happened indirectly predicted higher growth in the domains of *Relating to Others* and *Appreciation of Life*. Although we hypothesized that higher growth would be observed in those who experienced the event directly, because their core beliefs are more likely to be challenged if the event directly happened to them, our data showed no such effect. However, this effect was found in the *New Possibilities* domain in the Japanese sample. Thus, the role of subjective perceptions of the event characteristics, that is, whether the event was perceived as happening directly or not, might be different depending on the PTG domains as well as national background. *Spiritual Change* was the only PTG domain that was significantly affected by the strength of religious beliefs, supporting our hypothesis. Thus, even though our first hypothesis (i.e., religious strength would be positively associated with PTG) was supported when targeting overall growth, such patterns mostly reflect the relationship with the *Spiritual Change* domain of PTG. Finally, unlike the domains of *Appreciation of Life* or *Relating to Others*, the results showed that the *Personal Strength* domain is related only to the individual differences variables (i.e., gender and optimism), and not to the perceptions of the triggering event.

In the Japanese sample, the results also provided mixed support for our hypotheses. Because PTG is conceptualized to occur as a result of the cognitive and emotional struggle with disrupted core beliefs that may arise from a highly stressful life event (Calhoun et al., 2010), the extent to which the event directly affected the participant's life was hypothesized to play a role in PTG. If the event affected directly, it would likely be more influential, thus, it should lead to greater growth. However, the role of individuals' appraisal of the event was inconsistent in the Japanese sample. Those who perceived their highly stressful life event as something that directly happened to them reported higher growth in the domains of *New Possibilities*, whereas those who perceived their event as something that indirectly happened reported higher growth in the combined domain of *Spiritual Change* and *Appreciation of Life*. It is conceivable that personal growth in

the domain of *New Possibilities* may require active commitment that is driven by the event that directly happened to them, whereas the personal growth in the domain of *Spiritual Change* and *Appreciation of Life* may be achieved through a passive role, such as death of a loved one or natural disaster. These results suggest that there might be different ways that the triggering events could disrupt one's core beliefs or worldview. Future research should use more standardized assessment of the degree of corruption of core beliefs (e.g., Core Beliefs Inventory: Cann et al., 2010).

Strength of religious beliefs did not play any significant role in PTG domains in the Japanese sample, supporting our hypothesis. In a recent survey report (Smith, 2012), Japan ranked the lowest on strong religious belief, but also in the lower half on atheism, indicating that the difference between identifying as religious or as non-religious may be very subtle among Japanese. Our data supported this notion. Psychological growth in spirituality or religiosity is likely to play a vital role in the PTG process; however, the current PTGI assesses only two aspects of spirituality (i.e., "I have a better understanding of spiritual matters" and "I have a stronger religious faith"); thus, it may not necessarily capture the whole experience of spiritual growth (e.g., O'Rourke, Tallman, & Altmaier, 2008), especially across different national backgrounds with different religious traditions. Optimism was positively associated with three out of four PTG domains: *Relating to Others, New Possibilities*, and *Personal Strength*, partially supporting our hypothesis. Finally, gender differences were observed in the domain of *Personal Strength* in the Japanese sample, contrary to our predictions. Additional research is needed to gain a better understanding of the causes of the gender differences in PTG.

Several limitations need to be considered when interpreting or generalizing our results. First, equivalence between the two nation-level data sets may be called into question. For example, we used the data collection methods that are considered to be most appropriate for each country to conduct a survey with college students (i.e., receiving credit toward a course requirement is generally a standard practice in the United States, whereas participating with no credit is a standard practice in Japan); however, it is possible that the different way our participants were compensated may have affected our results. In addition, because college students were chosen for this study, the current findings may only be generalizable to young adults.

Second, because it is a retrospective and cross-sectional study, we cannot determine causality. Tedeschi and Calhoun (2004), for example, theorized that the psychological struggle with a highly challenging life event is crucial for PTG and that highly optimistic people may be less challenged by an event because their coping style or view of life should lead them to struggle less with their crisis. Also, it may be the case that lower PTG experiences decreased optimism in the Japanese sample. Our findings cannot answer these questions of causality. To test these possibilities, a longitudinal research design would be necessary. Third, this study compared three groups (Christians, Buddhists, and non-religious people) by using the religious affiliation that the participants identified when testing the first hypothesis and yielded no differences; however, the groups would be better defined if there were more detailed information available. For example, Christians in the current study included many different branches, such as Catholic, Protestant, and Methodist. Likewise, American non-religious people included atheists, people who claim agnostic, spiritual, and non-religious belief systems. Because PTG is a phenomenon that is likely to be precipitated by questioning core beliefs about the self, the individual differences in values and beliefs could have been assessed more precisely to fully appreciate the role of these belief systems. In addition, previous studies (e.g., Abu-Raiya, Pargament, & Mahoney, 2011) showed that positive religious coping, rather than negative religious coping, was related to PTG; thus, varying coping strategies may play a more critical role than the type of religious affiliation or strength of religious beliefs.

In addition, although this study examined the impact of event characteristics and individual differences variables on PTG, there are many other variables that are likely to explain the

socio-cultural elements of the model, such as social support or cultural values (e.g., Calhoun et al., 2010). The variables that were used in this study are also likely to be affected by the degree to which stress reactions are manifested as a result of the stressful life event. Thus, future research should assess the level of physical health and PTSD symptoms to further examine the relationships between the subjective impact of the event and personal growth in each of the PTG domains. The current study suggested that the PTG domains may include nation-specific or religion-specific aspects; thus, the validity of the PTGI across nations may affect the reliability and validity. These findings were also likely to be associated with the low Cronbach's alpha coefficients of the PTGI-J subscales in the current study. Finally, we used nation as a cultural variable; however, the assessment of cultural characteristics (e.g., relatedness vs. autonomy or collectivistic vs. individualistic), as well as ethnic differences within each nation (e.g., Caucasian, African American, Hispanic, Arabic or Middle Eastern, American Indian, Asian American, etc., in the United States), needs to be included in the future study.

Despite these limitations, the current findings have several implications for future research. First, it was nation that explained the relatively high score of the PTGI among Americans, because *Spiritual Change* is the only domain that was significantly affected by religious strength; the next step would be to investigate what elements of national background are responsible for perceived growth. Second, the current research showed that even though nation and religious strengths were related to personal growth, subjective perceptions specific to the experience of a stressful life event also can play a significant role in determining the extent of PTG. More comprehensive measurements are needed to capture the characteristics of the stressful experiences. Third, the regression models in the current study explained only 5% to 28% of the variance, which suggests the existence of other variables that would better determine the level of PTG.

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