

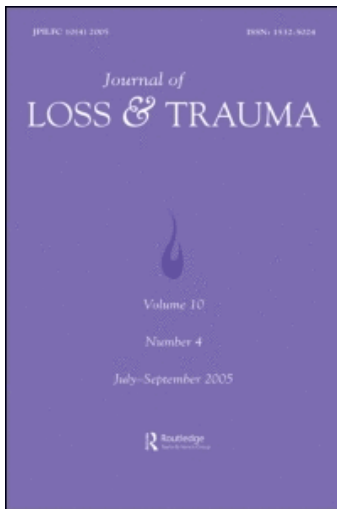
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### Terrorism in Two Cultures: Stress and Growth Following September 11 and the Madrid Train Bombings

Michael F. Steger\* <sup>a</sup>; Patricia A. Frazier <sup>b</sup>; Jose Luis Zacchanini <sup>c</sup>

<sup>a</sup> Department of Educational and Counseling Psychology, University of Louisville, Louisville, Kentucky, USA <sup>b</sup>

Department of Psychology, University of Minnesota-Twin Cities Campus, Minneapolis, Minnesota, USA <sup>c</sup>

Department of Psychology, University of Málaga, Málaga, Spain

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## **TERRORISM IN TWO CULTURES: STRESS AND GROWTH FOLLOWING SEPTEMBER 11 AND THE MADRID TRAIN BOMBINGS**

**MICHAEL F. STEGER\***

Department of Educational and Counseling Psychology, University of Louisville,  
Louisville, Kentucky, USA

**PATRICIA A. FRAZIER**

Department of Psychology, University of Minnesota–Twin Cities Campus,  
Minneapolis, Minnesota, USA

**JOSE LUIS ZACCHANINI**

Department of Psychology, University of Málaga, Málaga, Spain

*In this study, we compared the prevalence of post traumatic stress disorder (PTSD) and posttraumatic growth following the September 11, 2001, attacks in the United States and the March 11, 2004, Madrid, Spain train bombings. We also examined meaning in life as a correlate of posttrauma outcomes. A sample of midwestern college students (N = 188) reported less PTSD symptom severity following September 11 than did a sample of college students from southern Spain (N = 48) following the Madrid bombings. Americans reported more positive change than Spaniards following terrorism. Meaning in life was related to more positive outcomes in both countries.*

Terrorism is intended to disrupt people's expectations of what ordinarily happens, replacing them with expectations of unpredictable harm. As a result, terrorism may impact a nation's citizens far beyond areas directly targeted by attacks. A growing body of research suggests that September 11 was a national trauma in the U.S. (e.g., Schlenger et al., 2002). On March 11, 2004, four

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\*Michael F. Steger is currently an Assistant Professor in the Department of Psychology at Colorado State University.

Address correspondence to Michael F. Steger, Department of Psychology, Colorado State University, Fort Collins, CO 80523, USA. E-mail: michael\_f\_steger@yahoo.com

commuter trains in Madrid were destroyed by terrorist-planted explosives, killing approximately 200 people. An estimated 2 million Spanish citizens gathered in Madrid on a day of remembrance and mourning, suggesting that, like September 11, March 11 was a day of national trauma. The purposes of the present investigation were to compare posttraumatic outcomes, including both posttraumatic stress disorder (PTSD) symptoms and posttraumatic growth (PTG) following these two terroristic events, and to examine meaning in life as a correlate of both PTSD and PTG.

Recent research has begun systematically assessing the impact of the terrorist events of September 11 on individuals close to the attack sites (Galea et al., 2002; Schlenger et al., 2002), national samples of adults (e.g., Schlenger et al., 2002; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002), and college students (Fredrickson, Tugade, Waugh, & Larkin, 2003). PTSD prevalence rates have ranged between 4% (Schlenger et al., 2002) and 6% (e.g., Galea et al., 2002). The effects have persisted for at least 1 year after the attacks (Blanchard, Rowell, Kuhn, Rogers, & Wittrock, 2005). These studies suggest that, although the impact was greatest on those near "Ground Zero," vicarious traumatization was discernible across the U.S., and indeed the world (e.g., Linley, Joseph, Cooper, Harris, & Meyer, 2003), appearing to decline systematically with proximity (Blanchard et al., 2005).

Evidence suggests, however, that the effects of traumas such as terrorism might not be exclusively negative. The majority of individuals who experience traumatic events report positive, as well as negative, life changes (Tedeschi, Park, & Calhoun, 1998). Indeed, the handful of studies that have assessed positive life changes following September 11 have found that most respondents reported some positive effects, such as that the events made them reevaluate their priorities (e.g., Fredrickson et al., 2003; Linley et al., 2003).

Research on the Madrid train bombings is just now emerging. The few preliminary reports suggest some pervasive effects. For example, 2 weeks after the attacks, 50% of a large, national sample reported depressive symptoms, 47% reported acute stress symptoms, and 14% reported both (Muñoz, Crespo, Pérez-Santos, & Vázquez, 2004). Seventeen percent of those reporting symptoms also reported functional impairment. Among those who were directly exposed to the attacks or lost a loved one, 46% experienced a panic attack, 31% met criteria for major depression, and

28% had PTSD directly attributable to the attacks when interviewed 1 to 3 months afterwards (Iruarrizaga, Miguel-Tobal, Cano-Vindel, & Gonzalez-Ordi, 2004). No studies of which we are aware have assessed PTG following the Madrid train bombings or compared the prevalence of positive and negative outcomes following the two events.

There are reasons why Spaniards might report greater levels of posttraumatic stress than Americans. Madrid's 3.1 million residents constitute roughly 7.5% of the country's 41.1 million citizens (2003 estimates; United Nations, 2000), which is more than double the 3.1% of the U.S. population of 281.4 million constituted by New York City's 8 million and Washington, D.C.'s 580,000 residents (U.S. Census Bureau, 2000). Additionally, the number of people estimated to have marched in remembrance across Spain (11.5 million) following the bombings equaled roughly 28% of the nation's population (with 5% gathering in Madrid alone). An equal proportion of Americans marching across the country would have been 82.3 million. These very rough estimates suggest a greater impact of the terrorist events on the typical Spanish citizen.

Because most studies of PTG have used U.S. samples, studies of the prevalence of growth in other cultures would illuminate whether PTG is a universal phenomenon or culturally determined. Some (e.g., Held, 2002) have argued that the current cultural script in the U.S. reflects a "tyranny of the positive" in which people feel compelled to report positive life changes following trauma because they feel it is expected of them. Reports of growth may also be more common among individuals in independent cultures, who are more likely to strive to bolster positive self-views through self-enhancement (Heine, Lehman, Markus, & Kitayama, 1999). The U.S. is regarded as the most independent culture, whereas Spain is about equally independent and collectivistic (Diener & Diener, 1995). If PTG arises from culturally influenced self enhancement biases, then we would expect to see less growth in Spain following the Madrid train bombings than in the U.S. following September 11.

Studies assessing factors associated with experiencing higher levels of stress symptoms following the terrorist events of September 11 have focused primarily on demographic characteristics, exposure to the event, and prior stresses (e.g., Schlenger et al., 2002). Few have assessed psychological resources associated with

post-9 11 distress, such as social support (Galea et al., 2002) or coping (Silver et al., 2002), or assessed factors associated with positive life change following the September 11 attacks (Fredrickson et al., 2003; Linley et al., 2003).

One factor of particular theoretical interest is meaning. Distinctions have been made between situational meaning (comprehensibility) and global meaning (significance) (e.g., Park & Folkman, 1997). When people experience a trauma, they face an event that usually conflicts with the global meaning of their lives, namely how they understand the world and the significance of their lives. Their interpretation of the event (situational meaning) must be brought into alignment with their broader comprehension of the world and life (global meaning). If one is able to derive situational meaning from a trauma that preserves a positive global meaning, positive adjustment is theoretically more likely. Despite the importance of global meaning, most research on trauma and coping has focused on situational meaning. For instance, in studies of individuals experiencing various traumas, those who found meaning in the event were less distressed (e.g., McIntosh, Silver, & Wortman, 1993). The present investigation is the first known study examining global meaning in life as a correlate of posttrauma outcomes.

Our first purpose was to compare posttraumatic outcomes following the terrorist attacks in the U.S. and Spain. We assessed the principal positive and negative indicators of posttrauma adjustment: PTSD and PTG. We used a standardized measure of PTSD and two measures of PTG. As in previous studies, we anticipated that participants in the U.S. would report both PTSD and PTG, despite being hundreds of miles from the September 11 attacks. Given that the Madrid bombings may have more closely affected a larger portion of the Spanish population, we expected Spanish participants to report more PTSD. Given the lack of research, we did not formulate any specific hypotheses regarding the prevalence of PTG in Spain. However, if both samples report similar levels of PTG, that would suggest that PTG is a more universal phenomenon, whereas if the American sample reports more, cultural factors (e.g., self-enhancement) may play some role in reports of PTG.

Our second purpose was to assess correlates of these outcomes, particularly meaning in life. We hypothesized that having a stronger sense of meaning would be related to less posttraumatic

stress and more posttraumatic growth. We also assessed the importance of meaning in life as a predictor by examining whether it explained variability in outcomes beyond other factors (e.g., demographic factors, exposure, worries about terrorism).

## Method

### *United States*

#### PARTICIPANTS AND PROCEDURE

Participants were 188 students (62% female, 84% Caucasian) in undergraduate psychology courses at a large midwestern university. Ages ranged from 14 to 31 ( $M=20.8$ ,  $SD=2.5$ ). Participants completed questionnaires in small groups approximately 3 months after September 11, 2001 ( $M=88.0$  days,  $SD=1.9$ ). Participants were instructed to complete the questionnaires with regard to the recent terrorist events.

#### MEASURES

*Exposure to terrorist events.* To assess exposure to the terrorist events, respondents were asked if they knew anyone who died, or who was injured or lost property, as a result of the terrorist attacks, and how many of their close friends/family members live in New York City. These three variables were summed to create a total exposure score ranging from 0 to 3.

*Terrorism-related worries.* Respondents rated 13 items created for this study regarding concerns related to previous and potential terrorist events on a 1 (not at all worried) to 5 (very worried) scale, including “biological/chemical terrorism against us”, “being bombed or gassed in public places, like shopping malls”, and “my own personal safety” ( $\alpha$  in this sample = .89).

*PTSD.* PTSD symptoms were assessed using the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995), a 49-item self-report measure that assesses DSM-IV (APA, 1994) criteria for PTSD. The following scores were calculated: (a) whether participants met full diagnostic criteria as well as the cutoffs for the six separate criteria (A through F) and (b) symptom severity ratings for the intrusion, avoidance, and arousal subscales and for the 17 symptom items combined. The PDS includes one question regarding whether all symptoms were experienced for more than 1 month,

rather than separate questions for each symptom. Foa (1995) summarized evidence supporting the reliability and validity of the PDS. The primary index used here to reflect PTSD symptom severity was the symptom severity score, which is the sum of the severity ratings for the 17 intrusion, avoidance, and arousal symptoms. These items asked how often symptoms had occurred over the past month and were rated on a scale from 0 (not at all or only one time) to 3 (5 or more times a week/almost always), resulting in total scores ranging from 0 to 51 ( $\alpha$  in this sample = .86). Participants were asked to respond to the PDS items with regard to their experience with the terrorist attacks.

*Posttraumatic growth.* We used two measures to assess posttraumatic growth. The first was the Perceived Benefits Scale (PBS; McMillen & Fisher, 1998), a multidimensional scale of PTG in which respondents indicate the extent to which several statements were “like your experience of the terrorist events” (our modification of the instructions) from 0 (not at all like my experience) to 4 (very much like my experience). We used the increased community, spirituality, compassion, faith in people, and family closeness subscales. We aggregated these subscales into a single, 22-item posttraumatic growth index ( $\alpha$  in this sample = .90). McMillen and Fisher (1998) provided evidence of reliability and validity.

Our second measure of posttraumatic growth was the Life Change scale (LCS), an 18-item life change measure adapted from Frazier, Conlon, and Glaser (2001). Fifteen items reflected three common domains of positive change: changes in self (e.g., ability to recognize strengths), relationships (e.g., relationships with family), and life philosophy/spirituality (e.g., appreciation of life). Three additional items assessed changes in beliefs about the world (i.e., safety, fairness, justice). Respondents rated items on a 5-point scale from 1 (much worse now) to 5 (much better now). Higher scores reflect more positive changes ( $\alpha$  in this sample = .84).

*Meaning in life.* The Life Regards Index (LRI; Battista & Almond, 1973) is a 28-item scale designed to measure people’s beliefs that they are fulfilling goals in their lives that give their lives meaning. Thus, the LRI is a measure of global meaning. Items are rated from 1 (disagree) to 5 (agree) ( $\alpha$  in this sample = .94). We used the LRI total score (sample items: “I feel like I have found a really significant meaning for leading my life” and “Living is deeply fulfilling”). Although the LRI appears conflated with

measures of well-being and structurally unstable (e.g., Steger, 2006), at the time this study was conducted, it was recommended as the best available measure (Frazier, Oishi, & Steger, 2003).

### *Spain*

#### PARTICIPANTS AND PROCEDURE

Participants were 46 students (72% female) in undergraduate psychology courses at a university in southern Spain. Ages ranged from 17 to 34 ( $M=22.2$ ,  $SD=3.6$ ). Participants completed questionnaires in small groups approximately 3 months after March 11, 2003 ( $M=80.5$  days,  $SD=7.1$ ).

#### MEASURES

All measures were translated into Spanish by the third author, and checked for accuracy by a research assistant in Spain. In addition to the measures described earlier, we used a different measure of meaning in life. This new measure of meaning was developed to address concerns some have raised regarding the LRI (e.g., Steger, 2006). Internal consistency was good in this sample for all measures also used in the U.S. sample (terrorism-related worries  $\alpha = .86$ ; PDS  $\alpha = .86$ ; PBS  $\alpha = .97$ ; LCS  $\alpha = .70$ ).

The Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006) uses 10 items, rated on a scale from 1 (absolutely untrue) to 7 (absolutely true), to assess the extent to which people feel their lives are meaningful (MLQ-Presence) as well as the strength of people's search for meaning in life (MLQ-Search). The validity of the MLQ has been supported through a multitrait-multimethod study (in which the MLQ-Presence subscale correlated between .66 and .74 with the LRI), and confirmatory factor analyses have supported the two-factor structure. We performed maximum likelihood factor analysis with direct oblimin rotation in the present sample, which resulted in a good-fitting ( $\chi^2=28.26$ ,  $p>.25$ ), two-factor solution (MLQ-Search and MLQ-Presence). The two factors explained 35% and 26% of the variance (eigenvalues = 3.78 and 3.05, respectively). The MLQ appears to have good reliability and structural validity in the Spanish sample (alphas in this sample were .81 and .90 for MLQ-Presence and MLQ-Search, respectively). In contrast to American samples, in which the presence and search for meaning are generally negatively

correlated with small to medium effect sizes, the two factors were uncorrelated in this Spanish sample ( $r = -.01, p > .70$ ).

## Results

### *Descriptive Data—United States*

Most respondents did not know anyone who died (95%) or was injured or lost property (93%) during the events of September 11, 2001, although one-third had a close friend or family member living in New York City. Participants reported a relatively small overall level of concern or worry in response to the terrorist events. As shown in Table 1, participants reported “a little” posttraumatic growth on the PBS. Likewise, scores on the LCS were slightly

**TABLE 1** Descriptive Statistics

	U.S. ( $N = 188$ )		Spain ( $N = 46$ )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>PTSD</b>				
Number of reexperiencing symptoms (5 items)	1.80	1.37	1.89	1.57
Total reexperiencing symptom severity score <sup>a</sup>	2.36	2.16	2.56	2.38
Number of avoidance symptoms (7 items)	1.40	1.66	1.61	1.78
Total avoidance symptom severity score <sup>a</sup>	1.98	2.71	2.15	2.65
Number of arousal symptoms (5 items)	1.43	1.61	1.60	4.65
Total arousal symptom severity score <sup>a</sup>	1.94	2.47	1.98	2.12
Total symptom severity score (17 items)	6.27	6.04	6.78	6.15
Perceived Benefits Scale <sup>b</sup>	1.20	.85	.99	.94
Positive Life Changes Scale <sup>c</sup>	3.06	.36	2.82***	.78
Exposure	.46	.73	.89***	.80
Terrorism-related worries	2.54	.84	2.86*	.79
<b>Meaning in life</b>				
LRI <sup>d</sup>	3.58	.69		
MLQ-P <sup>e</sup>			4.23	1.21
MLQ-S <sup>e</sup>			3.59	1.39

*Note.* LRI = Life Regards Index; MLQ-P = Meaning in Life Questionnaire Presence subscale; MLQ-S = Meaning in Life Questionnaire Search subscale.

<sup>a</sup> Scores represent the sum of symptom severity ratings made on 0 to 3 scale.

<sup>b</sup> 0 = not at all like my experience to 4 = very much like my experience.

<sup>c</sup> 1 = much worse to 5 = much better.

<sup>d</sup> 1 = disagree to 5 = agree.

<sup>e</sup> 1 = absolutely untrue to 7 = absolutely true.

\*  $p < .05$ ; \*\*\*  $p < .001$  (for t tests of differences between U.S. and Spain scores).

above the midpoint, indicating slightly positive life change. Finally, most participants reported that their life was at least somewhat meaningful. The mean score from this sample ( $M=100.2$ ,  $SD=19.3$ ) was similar to that reported for another college student sample ( $M=98.6$ ; Battista & Almond, 1973).

Five percent of the U.S. sample met full DSM-IV criteria for PTSD as a result of the terrorist attacks. Almost half (44%) met Criterion A2 (fear for life and feelings of helplessness or terror), most (83%) had at least one intrusion symptom (Criterion B), 21% met the criterion of three avoidance symptoms (Criterion C), and 41% had at least two arousal symptoms (Criterion D). Almost half (46%) reported having symptoms for more than 1 month (Criterion E). Only 26% reported impairment in life functioning (Criterion F). The average numbers of symptoms and average symptom severity score for each criterion are reported in Table 1. American participants' symptom severity scores ( $M=6.3$ ,  $SD=6.0$ ) corresponded to a "mild" level of symptoms (Foa, 1995).

#### *Descriptive Data—Spain*

Most respondents did not know anyone who died (91%) or was injured or lost property (85%) during the Madrid train bombings, although, in contrast to participants from the United States, two-thirds (66%) had a close friend or family member living in Madrid at the time of the bombings. Participants reported knowing an average of 3.9 people ( $SD=5.5$ ) who lived in Madrid. As shown in Table 1, participants reported "a little" posttraumatic growth on the PBS. In contrast, scores on the LCS were slightly below the midpoint, indicating slightly negative life change following the bombings. Finally, most participants reported that their life was at least somewhat meaningful, and that they were not searching for meaning in life, as the mean score on the MLQ-Search was below the midpoint. The mean scores in this sample were significantly lower than those reported by American college students on the MLQ-Presence,  $t(444)=2.88$ ,  $p<.005$ ,  $d=.45$ , and MLQ-Search,  $t(444)=2.30$ ,  $p<.05$ ,  $d=.36$ , subscales (equivalent of 4.76 [1.18] and 4.68 [1.26] for MLQ-Presence and MLQ-S respectively; Steger at al., 2006).

Seventeen percent of the Spanish sample met full DSM-IV criteria for PTSD as a result of the terrorist attacks. More than

half (52%) met Criterion A2, most (73%) had at least one intrusion symptom (Criterion B), 31% met the criterion of three avoidance symptoms (Criterion C), and 44% had at least two arousal symptoms (Criterion D). Almost half (45%) reported having symptoms for more than 1 month (Criterion E), and almost half (48%) reported impairment in life functioning (Criterion F) as well. The average numbers of symptoms and average symptom severity score for each cluster are reported in Table 1. Spanish participants' symptom severity score ( $M=6.8$ ,  $SD=6.2$ ) corresponded to a "mild" level of symptoms (Foa, 1995).

### *Comparisons of Posttraumatic Outcomes Across Countries*

More than three times as many Spanish participants as Americans met DSM-IV criteria for PTSD (17% vs. 5%),  $\chi^2(1, N=234) = 4.08$ ,  $p < .05$ . The reason for the higher levels of PTSD appeared to be that a significantly higher percentage of Spanish participants reported impairment in life functioning (48% vs. 26%),  $\chi^2(1, N=234) = 10.06$ ,  $p < .005$ . There were no differences in symptom severity or in percentages of participants meeting other diagnostic criteria (all  $ps > .15$ ).

Spanish and American participants differed in other ways as well. Spanish participants reported significantly more exposure than did American participants,  $t(230) = 3.51$ ,  $p < .001$ ,  $d = .58$ . They also reported more terrorism-related worries,  $t(230) = 2.34$ ,  $p < .05$ ,  $d = .39$ . To examine whether these differences explained the higher PTSD rates, we performed a logistic regression predicting the diagnosis of PTSD from exposure and terrorism-related worries (Step 1) and country of origin (U.S. vs. Spain) in Step 2. Exposure to terrorism was not related to whether participants met PTSD criteria ( $B = .06$ ,  $SE_B = .34$ ,  $Wald = .03$ ,  $p = .87$ ). However, terrorism-related worries were significantly related to PTSD diagnosis ( $B = 1.50$ ,  $SE_B = .41$ ,  $Wald = 13.24$ ,  $p < .0001$ ), and country of origin was marginally related ( $B = 1.06$ ,  $SE_B = .56$ ,  $Wald = 3.59$ ,  $p = .06$ ). Thus, there may be additional cultural influences over PTSD diagnosis not accounted for by differences in exposure and terrorism-related worries.

There were no differences between American and Spanish participants on the PBS. However, Spanish participants reported significantly less positive life change on the LCS than did

Americans, with a large effect size,  $t(230) = 4.44$ ,  $p < .001$ ,  $d = .73$ . To further explore this difference, we examined frequencies for each change domain. The biggest difference was in terms of changes in life philosophy/spirituality,  $t(230) = 6.00$ ,  $p < .0001$ ,  $d = .94$ , followed by changes in relationships,  $t(230) = 4.44$ ,  $p < .001$ ,  $d = .73$ , and changes in self,  $t(230) = 2.90$ ,  $p < .005$ ,  $d = .48$ . In each case, American participants typically reported *positive life change*, whereas Spanish participants typically reported *negative life change*. Both samples reported negative changes in worldview, with only small differences,  $t(230) = 1.09$ ,  $p > .25$ ,  $d = .18$ . Thus, when Spanish participants were only given the option of endorsing positive changes (as on the PBS), they did so at the same rate as Americans. But when they were given the option of endorsing either positive or negative changes, they were much more likely than Americans to endorse negative change, resulting in lower scores on the LCS.

### *Regression Analyses Predicting Posttraumatic Outcomes*

The principal purpose of the regression analyses was to determine whether meaning in life was associated with PTSD and PTG controlling for demographics, exposure to terrorism, and terrorism-related worries. We performed three sets of hierarchical multiple regressions with PTSD and the two PTG measures as criterion variables. In the first step of all analyses, we entered any demographic variables associated with the outcome in question. In the second step, we entered exposure and terrorism-related worries. In the third step, we entered meaning in life. The correlations between the predictors and the outcome measures are presented in Table 2.

As shown in Table 3, in both samples, fewer terrorism-related worries and more meaning in life were related to less severe PTSD symptoms. Worries were related to more perceived benefits in both samples, and meaning in life was related to more positive life change in both samples.

## **Discussion**

The purpose of this study was to compare the adjustment of people from two cultures to two different terrorist attacks. We found

**TABLE 2** Correlates of PTSD and Positive Life Change

	U.S. (N= 188)			Spain (N= 46)		
	PTSD	PBS	LCS	PTSD	PBS	LCS
<b>Demographics</b>						
Age	.05	-.11	-.18*	-.31*	-.15	.36*
Sex <sup>a</sup>	.12 <sup>†</sup>	-.16*	.06	-.04	.18	-.16
Race <sup>b</sup>	-.11	.02	.11			
<b>Exposure</b>						
Know someone was died <sup>c</sup>	.23**	.06	.03	-.04	.17	-.02
Know someone hurt <sup>c</sup>	.18*	.04	.02	.08	.26 <sup>†</sup>	-.17
No. of friends/family New York/Madrid	.16*	.25**	-.02	-.07	-.10	.09
Summed exposure <sup>d</sup>	.22**	.13 <sup>†</sup>	-.02	-.03	.23	-.10
Terrorism-related worries	.31***	.32**	-.06	.46***	.39**	-.36*
<b>Meaning in life</b>						
LRI	-.18*	.10	.26*			
MLQ-P				-.32*	-.16	.37*
MLQ-S				-.23	-.19	.01
<b>Posttraumatic growth</b>						
PBS	.33***			.49***		
LCS	-.16*	.34***		-.38**	-.23	

*Note.* PTSD = posttraumatic stress disorder; PBS = Perceived Benefits Scale; LCS = Life Changes Scale; LRI = Life Regards Index; MLQ-P = Meaning in Life Questionnaire Presence subscale; MLQ-S = Meaning in Life Questionnaire Search subscale.

<sup>a</sup>Male = -1, female = 1, assessed only in U.S. sample.

<sup>b</sup>Caucasian = -1, other = 1, assessed only in the U.S. sample.

<sup>c</sup>Yes = 1, no = 0.

<sup>d</sup>1 point each given for affirmative answer to know died, know hurt, and any friends/family in New York City/Madrid.

<sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

evidence of both posttraumatic stress symptoms and posttraumatic growth in both cultures among individuals living distant from the terrorist attacks. In accord with other research that reported PTSD prevalence rates between 4% (Schlenger et al., 2002) and 6% (e.g., Galea et al., 2002), 5% of our American sample met PTSD diagnostic criteria. The PTSD prevalence rate in Spain was significantly higher (17%), which was not fully explained by differences in the amount of exposure to or worry about terrorist events.

How do PTSD prevalence rates of 5% (U.S.) and 17% (Spain) compare to PTSD rates following other traumas? In a large U.S.-representative sample (Breslau et al., 1998), the average risk of

**TABLE 3** Multiple Regressions Assessing Relations Between Meaning in Life and PTSD and PTG Controlling for Demographics, Exposure, and Terrorism-Related Worries

		<i>B</i>	<i>SE<sub>B</sub></i>	$\beta$	Adj. <i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$
DV = PTSD							
U.S.							
Step							
1	Exposure	1.17	.41	.20**	.12	.09	4.11***
	Worries	1.76	.41	.29**			
2	Meaning (LRI)	-1.07	.41	-.18*	.15	.03	6.87**
Spain							
Step							
1	Age	-.94	.83	-.16	.07	.09	3.91 <sup>†</sup>
2	Exposure	-.30	.81	-.05	.18	.15	3.78*
	Worries	2.69	.84	.44***			
3	Meaning (MLQ-P)	-2.16	.81	-.35*	.29	.12	7.05*
DV = PBS							
U.S.							
Step							
1	Sex <sup>a</sup>	-.06	.06	-.07	.02	.03	4.92*
2	Exposure	.08	.06	.10	.10	.08	9.55***
	Worries	.25	.06	.30***			
3	Meaning (LRI)	.09	.06	.11	.11	.01	2.37
Spain							
Step							
1	Exposure	.24	.13	.25 <sup>†</sup>	.16	.20	5.10*
	Worries	.35	.13	.37*			
2	Meaning (MLQ-P)	-.17	.13	-.18	.18	.03	1.70
DV = LCS							
U.S.							
Step							
1	Age	-.05	.03	-.13 <sup>†</sup>	.02	.02	3.95 <sup>†</sup>
2	Exposure	-.00	.03	-.01	.01	.00	0.27
	Worries	-.02	.03	-.05			
3	Meaning (LRI)	.10	.03	.26***	.07	.07	13.60***
Spain							
Step							
1	Age	.08	.04	.26 <sup>†</sup>	.13	.16	7.51**
2	Exposure	-.03	.04	-.09	.17	.08	1.99
	Worries	-.09	.04	-.32*			
3	Meaning (MLQ-P)	.13	.04	.43***	.36	.18	11.9***

*Note.* *N* = 188 (U.S.), *N* = 46 (Spain). PTSD = Posttraumatic Stress Disorder; PTG = Posttraumatic growth; DV = Dependent variable; PBS = Perceived Benefits Scale; LCS = Life Changes Scale; LRI = Life Regard Index; MLQ-P = Meaning in Life Questionnaire Presence subscale.

<sup>a</sup>-1 = male, 1 = female.

<sup>†</sup>*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

PTSD following any trauma was 9%, although the risk differed greatly across events (21% for assaultive violence vs. 2% for learning about trauma to others). PTSD rates near 5% were reported for natural disasters (4%) and witnessing trauma (7%). Thus, PTSD rates among American participants were higher than those reported after other indirectly experienced traumas, although not as high as those reported following other directly experienced traumas. In Spain, rates of PTSD were significantly higher than the prevalence rate of 2% reported for a general sample of Spaniards (Orengo-Garcia, Rodriguez, Lahera, & Ramirez, 2001).

With regard to posttraumatic growth, participants from both American and Spanish samples reported “a little” benefit from the attacks on the PBS. In contrast, Americans reported significantly more PTG, in all domains, than Spanish participants on the LCS, which assesses both positive and negative change. Overall, Americans were more likely to report positive changes and Spaniards were more likely to report negative changes. Our findings from the LCS are consistent with psychological theories of culture that anticipate higher levels of self-enhancement in independent cultures like the United States than in less independent, more collectivistic cultures like Spain (e.g., Heine et al., 1999). In the United States, the cultural script incorporates the theme of continual improvement and individual growth. When people evaluate the disruption caused by trauma, they are therefore likely to focus on positive change, in keeping with cultural expectations. In contrast, other cultures may emphasize the negative aspects of trauma or the intermingling of positive and negative. Individuals from those cultures may endorse positive change when that is their only option, but negatively valenced change might be more salient to them when given the choice. Thus, use of unipolar scales might mask important cultural differences in the propensity to report PTG. In both countries, responses to the PBS may also be more affected by response sets because all items reflect positive change. That is, scores may be inflated if respondents feel that they “should” endorse some items. In contrast, reports of positive change on the LCS may be more accurate because respondents can endorse positive, negative, or no change. In support of this hypothesis, in both cultures, higher scores on the LCS were more strongly related to meaning and to lower PTSD symptom severity scores.

The second purpose of our study was to assess meaning in life as a correlate of posttrauma adjustment. In both cultures, the presence of meaning was associated with less distress and more positive life changes on the LCS, using two different measures of meaning in life. In establishing these findings, we controlled for participants' demographics, exposure to terrorism, and worries about future attacks. Thus, controlling for other indicators of adjustment, meaning was still an important correlate and is deserving of more attention in trauma research.

It is tantalizing to speculate regarding the cultural differences this research appeared to uncover in posttrauma adjustment. Although many of these differences are consistent with psychological theories of culture (e.g., Heine et al., 1999), this research should be viewed as an exploratory effort in an important area and must be interpreted in light of several limitations. First, because this study was cross-sectional, questions about the direction of the relation between global meaning and posttrauma adjustment cannot be adequately addressed. Prospective, longitudinal studies are needed to improve our understanding of the processes that facilitate growth and attenuate distress. Second, we assessed a limited number of variables that could influence posttrauma adjustment. Other important variables to incorporate in future studies incorporate social support and previous trauma history. Because some of the measures used in this research were created for this study, additional work should be invested in validating measures of terrorism-related worries and exposure to terrorism. Finally, our Spanish sample was quite small, and both samples were convenience samples. Future research should endeavor to obtain larger samples, both directly and indirectly affected by terrorist events, including individuals from a diverse range of ages and cultural backgrounds. Nonetheless, the cultural differences that emerged in this study underscore the potential importance of future research comparing theories and assumptions about posttrauma adjustment across cultures and events.

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**Michael F. Steger** is an Assistant Professor in the Department of Psychology at Colorado State University, Fort Collins. His research focuses on the role meaning plays in enhancing well-being and reducing psychological distress.

**Patricia A. Frazier** is a Professor at the University of Minnesota. Her research focus has been to identify factors associated with adjustment to stressful or traumatic life events, with particular regard to the role of perceived control.

**Jose Luis Zacchanini** is a Professor at the University of Malaga, Malaga, Spain.