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Spanish Adaptation and Validation of the Posttraumatic Growth Inventory–Short Form

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The purpose of this article is to adapt and validate the short form of the Posttraumatic Growth Inventory (PTGI-SF) in Spanish. The scale consists of 10 items distributed in 5 posttraumatic growth dimensions measured in the original instrument. The psychometric properties and dimensionality of the scale are examined in a sample of college students (N = 681). Results lend support to the validity and reliability (α = .83) of the PTGI-SF. The dimensions of PTGI-SF show correlations ranging between .29 and .52. In addition, the inventory correlates significantly with deliberate rumination (r = .39) and the search for meaning in life (r = .32). The factor loadings of the items in the confirmatory factor analysis varied between .52 and .87, showing good fit indexes (comparative fit index = .97, Tucker-Lewis index = .93, relative fit index = .90, incremental fit index = .97, normed fit index = .96, and root mean square error of approximation = .05). Multigroup confirmatory factor analysis supported invariance of the PTGI-SF across the 2 groups. Finally, significantly higher PTGI-SF scores were observed in subjects who were actively looking for meaning in life, or had found it after a seeking process, than in subjects who had not looked for meaning in life or had given up because they had not been successful.

Keywords: posttraumatic growth; trauma; stress; Posttraumatic Growth Inventory; meaning in life

Many studies addressing individual and collective consequences of violence have focused on their most evident and painful aspect: trauma. However, there is another aspect that has been studied less, and it refers to the capacity of individuals and groups to make positive changes in their lives. These changes are the result of their efforts to process a traumatic experience (Manciaux, Vanistendael, Lecomte, & Cyrulnik, 2001; Tedeschi & Calhoun, 2004). They would be associated with changes in their perceptions of themselves (individuals feel safer and more confident and discover unknown strengths in themselves), in interpersonal relationships (more closeness and

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ability to protect others; Burt & Katz, 1987), and in their philosophy of life (changing priorities and increasing their sense of life and control over their own lives; Affleck, Allen, Tennen, McGrade, & Ratzan, 1985; Tedeschi & Calhoun, 1996). They are individuals who, although aware of the damage the experience caused them and the fear this process might have produced, decide to understand the new world in which they live to reconstruct their lives, taking into account their painful vital experience. In other words, they give meaning to their negative experience and use it to grow and advance.

Although individuals who have gone through traumatic events are not likely to agree to experience them again, many have been able to take advantage of these events to give new meaning to their lives, discovering unknown strengths that can help them to protect themselves. This experience is related to adaptation and growth. It involves recovering their condition as active agents in constructing their lives, and it results from a struggle against pressing conditions and highly negative circumstances (Cho & Park, 2013).

Evidence has been provided of the devastating psychological, physical, and social effects trauma can cause (Everly, 1995; Rubonis & Bickman, 1991; Solomon & Mikulincer, 2006). These effects can be represented as a rupture of cognitive schemes concerning oneself, others, and the world (Janoff-Bulman, 1995; Norris, Kaniasty, & Thompson, 1997) and as involving a sense of disruption of the "smooth flow of daily life" (Tuval-Mashiach et al., 2004). Perhaps more appealing and less evident is the fact that a large number of individuals report positive changes in their lives, associated with an aspect of growth, which, paradoxically, might have not been experienced without undergoing the traumatic event. In the same way, there are individuals who report an increased sense of control of their own lives, once they have been able to process the trauma.

Posttraumatic growth (PTG) is a positive psychological change resulting from a struggle with difficult life circumstances (Tedeschi & Calhoun, 2004). This change represents an important challenge to an individual's adaptation possibilities and resources because it may help to adjust the way he or she understands the world and his or her place in it. It is an improvement process resulting from the struggle with the new reality of the consequences of trauma (Tedeschi, 1999; Tedeschi & Calhoun, 1996; Turner & Cox, 2004). In other words, it is an attempt to adapt to negative circumstances that frequently result in high levels of anguish and unpleasant psychological reactions, requiring the construction of a new narrative about the self (Tuval-Mashiach et al., 2004). In addition, it is a developmental process after which individuals feel stronger and better, even though they do not want to go through the difficult experience again.

Systematic research on growth processes after trauma is relatively recent. Some scales make it possible to quantify the positive changes resulting from facing adversity. In Chile, there are no previous studies to evaluate posttraumatic growth or validate a posttraumatic growth inventory.

The instrument most widely used to measure posttraumatic growth in various populations and circumstances is the Posttraumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoum (1996). This inventory has been translated into Spanish and validated for used in this language (Weiss & Berger, 2006). It is based on a systematic review of the literature on responses to trauma and interviews with individuals subjected to highly stressful conditions (Cann, Calhoun, Tedeschi, Taku, et al., 2010). The scale consists of 21 items and was psychometrically evaluated (Tedeschi & Calhoum, 1996), showing excellent internal consistency ($\alpha = .90$) and acceptable test–retest reliability ($r = .71$). In addition, the scale's validity is shown by the correlation between the responses given by individuals who experienced traumatic events and by those close to them who

confirmed the perception of growth (Shakespeare-Finch & Enders, 2008; Weiss, 2002). Moreover, in other studies, potential response bias in the results has been controlled by social desirability scales such as the Marlowe-Crowne Social Desirability Scale (Tedeschi & Calhoum, 1996).

The PTGI includes five dimensions. Its five-factor structure has been used in various studies (Linley, Andrews, & Joseph, 2007; Taku, Cann, Calhoun, & Tedeschi, 2008). These dimensions refer to recognizing new possibilities in life, relating more intimate relations with others, discovering unknown personal strengths, appreciation of life and changed priorities, and spiritual change and development. Reliability coefficients ranging from .67 to .85 (Tedeschi & Calhoum, 1996) are reported for these dimensions. This scale has been translated into several languages, including Chinese, German, and Albanian, among others (Ho, Chan, & Ho, 2004; Lev-Wiesel & Amir, 2003; Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003).

In addition, the PTGI shows a consistent positive relationship with variables such as deliberate rumination (Kashdan & Kane, 2011; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012), purpose of life (Kashdan & McKnight, 2009; Linley & Joseph, 2011), and reconstructing assumptions about the world (Cann, Calhoun, Tedeschi, Kilmer, et al., 2010; Janoff-Bulman, 2006). These relationships indicate that challenges to the assumptive world leading to constructive cognitive efforts are more likely to produce growth. In addition, growth is positively associated with increased purpose in life, and stressful events can also initiate a process of examining basic assumptions and promoting growth through this examination.

The short form of this scale (PTGI-SF) consists of 10 items. It was developed because of the need to have a short measure that can easily be responded to by individuals who, although feeling involved and wanting to participate in studies, do not have the necessary physical energy (e.g., patients undergoing aggressive cancer treatment) or find themselves in situations that limit their ability to respond (e.g., active military operations). This short form has also been used in research designs where these scales are accompanied by a whole set of scales and additional tests (Cann, Calhoun, Tedeschi, Taku, et al., 2010).

So far, the PTGI-SF is not available in Spanish. The purpose of this study is to adapt and validate the short form of the PTGI and analyze its psychometric properties. Although the PTGI is a reasonably short measure (21 items), there are various compelling reasons to develop a shorter form. In Chile, some people have such extreme circumstances that completing the traditional form of the PTGI could require too much psychological effort in contexts where research involves the administration of several measures and the respondent's time or energy is limited. Examples would be people who are victims of political violence in which the participants are actively engaged in the process of adapting to a major life crisis (Cárdenas, Páez, & Rimé, 2013) or the case of minority groups in the context of their protest activities (Barrientos et al., 2011).

If the PTIG-SF works correctly, a positive and significant correlation should be found with measures about the search for meaning in life, and there should be positive correlations between strategies of deliberate rumination about traumatic events and growth measures. In addition, differences should be found between individuals who want to actively reconstruct assumptions about the world and those who have stopped trying to do so. All of these correlations would be consistent with the theoretical assumptions and empirical findings related to the functioning of the PTGI: relationship with deliberate rumination (Taku et al., 2008; Triplett et al., 2012), with the active search for meaning (Cann, Calhoun, Tedeschi, Taku, et al., 2010; Linley & Joseph, 2011), and with the reconstruction of

assumptions about the world (Janoff-Bulman, 2006). All of them report an active attempt to think about the traumatic experience, make sense of it (struggling with the stressful experience and recognition of PTG can lead to a change in the sense of meaning in one's life), and integrate it into the previous belief system. We expect to find a positive relationship between posttraumatic growth and finding meaning in life and deliberate rumination.

METHOD

Participants

This study used a convenience sample (nonprobability sample) consisting of 681 participants, 256 men (37.6%) and 425 women (62.4%), whose ages ranged between 18 and 34 years ($M = 20.76$, $SD = 2.47$). All the participants were college students who reported some type of traumatic experience in the past year. Among the most stressful events experienced were the death of a family member or close friend (26.7%), negative family events such as being fired from work or moving to another city (15.7%), parents' divorce or separation (11.3%), serious injury or disease (7.9%), and serious accidents (3.7%), among others.

Measures

The questionnaire consists of two parts. The first part includes several sociodemographic questions whose purpose is to describe and divide the sample (sex, age, socioeconomic level, type of stressful event, and time elapsed since it occurred).

The second part includes the different scales used and the PTGI-SF.

Posttraumatic Growth Inventory–Short Form. The short form of the Posttraumatic Growth Inventory (Cann, Calhoun, Tedeschi, Taku, et al., 2010) consists of 10 items with response options from 1 (*completely in disagreement*) to 6 (*completely in agreement*). The intermediate response options were as follows: 2 = *disagree*, 3 = *slightly disagree*, 4 = *slightly agree*, 5 = *agree*. Each of the posttraumatic growth dimensions (new possibilities, relating to others, personal strength, appreciation of life, and spiritual change) is associated with two items (see Appendix).

The Meaning in Life Questionnaire. This instrument (Steger, Frazier, Oishi, & Kaler, 2006) consists of 6 items with response options from 1 (*completely in disagreement*) to 6 (*completely in agreement*), and it was validated for used in the Chilean population (Steger & Samman, 2012). These items measure two dimensions: presence of meaning (e.g., "I have a clear idea of what gives meaning to my life") and search for meaning (e.g., "I am looking for a purpose or mission in my life"). A higher score indicated greater meaning in life. A confirmatory factor analysis showed good fit indices, $\chi^2 = 57.68$, $p < .001$, goodness of fit index [GFI] = .93, adjusted goodness of fit index [AGFI] = .89, normed fit index [NFI] = .93, comparative fit index [CFI] = .97, Tucker-Lewis index [TLI] = .96, incremental fit index [IFI] = .97. The reliability coefficient for the total scale was .89 (Cronbach's alpha) in this application. Reliability coefficients for presence of meaning and search for meaning were .85 and .83, respectively.

Reconstruction of Assumptions About the World and the Search for Meaning in Life as a Consequence of Traumatic Events. This scale (Davis, Wohl, & Verberg, 2007) was validated for use in a national sample (Cárdenas, Barrientos, & Ricci, 2014b). It offers four possible response options to a single question. The subject must choose the one with

which he or she identifies most. Options are "I did not feel the need to find a meaning for this event," "I tried to find a meaning for this event, but I was not successful and stopped trying," "I am still trying to find or give meaning to the event," and "I think I have been able to find a meaning for this event or I have found it outside."

Event-Related Rumination Inventory. This instrument (Cann, Calhoun, Tedeschi, Kilmer, et al., 2010) consists of two dimensions referring to automatic or intrusive rumination about events and deliberate rumination or repetition of events (e.g., "I thought over the event and tried to understand what happened"). This scale was adapted for use in a national sample (Cárdenas, Barrientos, & Ricci, 2014a). In this study, only the deliberate rumination scale was used because the theory establishes a positive relationship between this type of rumination and growth. A confirmatory factor analysis showed good fit indices, $\chi^2 = 164.24$, $p < .001$, GFI = .93, AGFI = .87, NFI = .90, CFI = .91, TLI = .86, IFI = .91. The scale consists of 10 items with response options from 1 (*completely in disagreement*) to 6 (*completely in agreement*). The reliability coefficient for the scale was .86 (Cronbach's alpha) in this application.

Procedure

The PTGI-SF was revised and translated by two bilingual experts (in English and Spanish) who compared it to the Spanish PTGI version. This translation was validated for semantic pertinence (the meaning of all reactants is the same as those in the original scale) and content (the content of each item is relevant and represents each of the PTGI dimensions) through a back-translation process (it was translated from English to Spanish and then translated from Spanish to English by native speakers).

Participants were informed that the study dealt with how people respond to stressful events and the existence of personal changes after these events. The native language of all the participants was Spanish. Confidentiality and anonymity were guaranteed. Participants gave their consent to participate in the study. Participation was voluntary. Data were collected from April to June 2013 in the city of Antofagasta, Chile.

Data Analysis

SPSS 20.0, AMOS 18, and G*Power 3.1.6 were used for all analyses. A descriptive analysis (mean, standard deviation, symmetry, and kurtosis) was conducted on all variables. The reliability coefficients were calculated for the scales (Cronbach's alpha) as well as the correlations between the PTGI-SF dimensions and the measures used to observe convergent validity. One-factor analyses of variance (ANOVAs) were performed, and effect sizes for mean differences were calculated, with the latter being significant, to compare individuals reporting low and high levels of meaning and the reconstruction of assumptions about the world that have been changed by traumatic events. The correlated five-factor model was tested with a confirmatory-type factor analysis (maximum likelihood method), and multigroup confirmatory factor analyses using a stepwise procedure established the invariance of the PTGI-SF across two samples: people reporting situations resulting in death or serious accident and people reporting other traumatic situations (We have labeled these groups *more severe* and *less severe*). This procedure began by estimating the baseline model with no constraints. In later models, restrictions were added while holding the previous restrictions constant. The constraints were imposed on the factor loadings, variances, and covariances. The nested models were compared in each step by examining the chi-square differences test and the change in the CFI values as well as the other fit indices.

If the chi-square difference statistics fail to reveal significant differences between the baseline model and each subsequent model, we can assume the model's invariance (Byrne, 2001; Purc-Stephenson, 2014). On the other hand, the changes in the CFI value must be less than .01 to establish invariance (Cheung & Rensvold).

RESULTS

Descriptives

Table 1 shows the means, standard deviations, asymmetry indexes, and kurtosis of each PTGI-SF item, the dimensions, and the total scores. All the means lie slightly above the midpoint of the scale and show relatively similar dispersion levels.

An analysis of the PTGI-SF items does not indicate atypical or extreme cases in the responses to the items. The distribution of most of the items shows slightly negative skewness, indicating that data are grouped together below the mean. The kurtosis level reveals that responses accumulated at the distribution tails are slightly higher than on

TABLE 1. Measures of Central Tendency, Dispersion, and Distribution Form

	M (*SD*)	Skewness	Kurtosis
I changed my priorities about what is important in life.	3.48 (1.59)	−0.89	−0.24
I have a greater appreciation for the value of my own life.	3.78 (1.54)	−1.19	0.39
I am able to do better things with my life.	3.79 (1.35)	1.08	0.56
I have a better understanding of spiritual matters.	3.01 (1.72)	−0.47	−0.98
I have a greater sense of closeness with others.	3.25 (1.54)	−0.71	−0.44
I established a new path for my life.	3.20 (1.69)	−0.63	−0.80
I know better that I can handle difficulties.	3.60 (1.38)	−0.98	0.36
I have a stronger religious faith.	2.21 (1.86)	0.13	−1.45
I discovered that I'm stronger than I thought I was.	3.78 (1.45)	−1.17	0.52
I learned a great deal about how wonderful people are.	3.35 (1.63)	−0.74	−0.56
Dimension 1—relating to others	3.29 (1.41)	−0.81	−0.15
Dimension 2—new possibilities	3.49 (1.26)	−0.66	−0.19
Dimension 3—personal strength	3.68 (1.21)	−0.95	0.47
Dimension 4—spiritual change	2.60 (1.55)	−0.14	−1.01
Dimension 5—appreciation of life	3.62 (1.31)	−0.92	0.11
PTGI-SF—total scale	3.34 (0.98)	−0.72	0.26

Note. The responses range for all items was 1–6. PTGI-SF = Posttraumatic Growth Inventory–Short Form.

TABLE 2. Reliability and Correlations Between Posttraumatic Growth Inventory–Short Form (PTGI-SF) Dimensions

	α	D2	D3	D4	D5	PTGI-SF
Relating to others (D1)	.72	.36**	.45**	.44**	.38**	.76**
New possibilities (D2)	.52	—	.52**	.42**	.57**	.75**
Personal strength (D3)	.62		—	.29**	.33**	.71**
Spiritual change (D4)	.66			—	.38**	.72**
Appreciation of life (D5)	.58				—	.69**
PTGI-SF	.83					—

**$p < .01$.

a normal curve. The distribution of responses on the total scale shows certain negative skewness and a leptokurtic distribution.

Reliability

The PTGI-SF shows a reliability coefficient of .83 for all the items. The correlations of items with the test total range from .39 to .60 (Table 2). The elimination of a scale item does not improve the reliability of the instrument. The reliabilities of the dimensions were as follows: relating to others ($\alpha = .72$), new possibilities ($\alpha =. 52$), personal strength ($\alpha = .62$), spiritual change ($\alpha = .66$), and appreciation of life ($\alpha = .58$).

Correlations Between Dimensions

All the scale dimensions are significantly associated with each other and with the whole inventory (analyses were performed on the factor scores). These correlations are moderate and indicate that, although related, they measure different dimensions of the same process, that is, posttraumatic growth. Table 2 shows correlations between the dimensions of the PTGI-SF, which range from .29 to .52 (all correlations between dimensions are positive and significant).

Correlations between the dimensions and the total scale are significant and high (Pearson correlations range between .69 and .76), indicating that each dimension is closely related to the whole construct the scale measures (posttraumatic growth).

Confirmatory Factor Analysis

A model with five correlated first-order factors was tested and compared to the general factor model. Previous studies confirmed this model with five correlated factors as the one with more robust general fit (Taku et al., 2008). The model parameters were estimated using the maximum likelihood method. The fit indexes of the model and the estimations of factor loadings for each item were obtained.

Several fit indexes were used to estimate model fit: χ^2, CFI, TLI, NFI, GFI, AGFI, IFI, Akaike's information criterion (AIC), and the root mean square error of approximation (RMSEA). The chi-square is not expected to be significant (although this indicator should not be used to discard a model because of its sensitivity to sample size). TLI, IFI, GFI,

TABLE 3. Factor Loadings of Items in the Confirmatory Factor Analysis

	Dimension	Factor Loading
I changed my priorities about what is important in life.	5	.53
I have a greater appreciation for the value of my own life.	5	.76
I am able to do better things with my life.	2	.63
I have a better understanding of spiritual matters.	4	.88
I have a greater sense of closeness with others.	1	.75
I established a new path for my life.	2	.56
I know better that I can handle difficulties.	3	.71
I have a stronger religious faith.	4	.55
I discovered that I'm stronger than I thought I was.	3	.62
I learned a great deal about how wonderful people are.	1	.76

AGFI, NFI, and CFI should be the closest to 1, although they are always expected to be higher than .90 (Bentler & Dudgeon, 1996; Hu & Bentler, 1995). The RSMEA value should be lower than the critical value of .08 (Browne & Cudeck, 1993). AIC is used in comparing two or more models, with smaller values indicating a better fit (Byrne, 2001).

The data obtained show a good fit to the theoretical model because, even though the chi-square value is significant, $\chi^2(25) = 82.03$, $p < .001$ (the hypothesized model should be rejected because what is contrasted is the null hypothesis of perfect fit between empirical and theoretical data), the value of CFI = .968, TLI = .943, GFI = .976, AGFI = .948, IFI = .969, and NFI = .956 clearly showing a good data fit. Finally, the value of RMSEA was .059 (95% CI [.045, .07]), indicating a good general fit of the model. The factor loadings of all items range between .53 and .88 (Table 3). The five-factor model (AIC = 142.34) shows better fit than the one-factor model (AIC = 386.14).

Thus, results obtained by administrating the PTGI-SF 10-item scale in this study are consistent with results reported in other studies (Cann, Calhoun, Tedeschi, Taku, et al., 2010; Taku et al., 2008). The five-factor model showed an excellent fit and was better than the one-factor model on all indexes.

Two separate confirmatory factor analyses were performed for each group (Table 4). The model provided a good fit for both: "more severe," $\chi^2(25) = 62.8$, $p < .001$, CFI = .95, GFI = .97, AGFI = .94, IFI = .96, NFI = .94, and RMSEA = .078, and "less severe," $\chi^2(25) = 61.3$, $p < .001$, CFI = .97, GFI = .95, AGFI = .89, IFI = .97, NFI = .95, and RMSEA = .060. The fit indices showed high values for the "more severe" and "less severe," suggesting that the models are good for both, although slightly better in the case of the "less severe" group.

Testing Invariance Across Samples

The multigroup variance results are presented in Table 4. The baseline model showed that the hypothesized model of the PTGI-SF structure fit well across the two groups. When comparing the subsequent models with additional restrictions to the baseline model

TABLE 4. Goodness of Fit for Factorial Invariance

Model	χ^2(df)	CFI	GFI	AGFI	IFI	NFI	TLI	RSMEA (95% CI)	AIC
Model 1—measurement model									
One-factor model	346.1 (35)	.829	.902	.847	.830	.814	.780	.117 [.106, .128]	386.14
Five-factor model	82.3 (25)	.968	.976	.948	.969	.956	.943	.059 [.045, .074]	142.34
Model 2—single-sample analysis									
More severe (five-factor)	62.8 (25)	.948	.952	.894	.949	.919	.906	.078 [.054, .102]	
Less severe (five-factor)	61.3 (25)	.968	.971	.936	.969	.948	.943	.060 [.041, .079]	
Model 3—multiple group analysis									
Baseline	124.1 (50)	.960	.964	.920	.961	.937	.928	.048 [.037, .058]	
Factor loadings constraint (FL)	135.1 (55)	.957	.960	.920	.958	.932	.930	.047 [.037, .057]	
FL + Variances constraint (V)	146.6 (60)	.954	.957	.921	.954	.925	.930	.047 [.037, .057]	
FL + V + Covariances	177.7 (70)	.942	.948	.919	.943	.909	.926	.049 [.040, .058]	

Note. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; IFI = incremental fit index; NFI = normed fit index; TLI = Tucker-Lewis index; RSMEA = root mean square error of approximation; AIC = Akaike's information criterion.

(in Model A, constraints were imposed on the factor loadings; in Model B, constraints were imposed on factor loadings and variances; and in Model C, constraints were imposed on the factor loadings, variances, and covariances), the $\Delta\chi^2$ values were not significant. The change in CFI values was less than .01, which allows us to establish invariance.

Validity Indicators

The PTGI-SF is positively correlated with deliberate repetitive rumination ($r = .39$; $p < .001$) and meaning in life ($r = .33$; $p < .001$). These results reveal that the greater the presence of deliberate rumination, the greater the reported level of posttraumatic growth and meaning in life. The levels of growth are more associated with the search for meaning ($r = .32$; $p < .001$) than with the presence of meaning ($r = .14$; $p < .001$). These results indicate that the search for meaning and deliberate rumination are directly and significantly associated with the posttraumatic growth reported.

In addition, there are significant differences on all the PTGI-SF dimension scores. Moreover, the score on this scale reveals significant differences between individuals reporting low levels of meaning and the reconstruction of assumptions about the world that were changed by traumatic events (Table 5). Post hoc analyses indicate that in all cases, differences involve individuals who did not feel the need to reconstruct meaning (14.76%), or those who, having felt the need, gave up without finding it (9.65%), compared to those who are still actively looking for it (16.45%), or reported that they had found it (59.13%).

TABLE 5. Descriptive Statistics for Each Group and Group Mean Comparisons

	I Felt No Need to Try	I Tried but I Have Given Up	I Am Still Trying to Find It	I Have Been Able to Find It	$F(4, 660)$, Significance	f
Relating to others	2.95 (1.41)	2.86 (1.54)	3.46 (1.21)	3.40 (1.41)	5.29, $p < .001$**	.15
New possibilities	3.03 (1.36)	3.41 (1.19)	3.56 (1.20)	3.60 (1.24)	5.74, $p < .001$**	.32
Personal strength	3.23 (1.23)	3.32 (1.48)	3.68 (1.10)	3.87 (1.13)	10.19, $p < .001$**	.21
Spiritual change	2.39 (1.65)	2.16 (1.61)	2.86 (1.45)	2.67 (1.53)	3.61, $p = .013$**	.13
Appreciation of life	3.12 (1.41)	3.53 (1.41)	3.76 (1.18)	3.74 (1.26)	6.56, $p < .001$**	.17
PTGI-SF	2.95 (1.02)	3.07 (1.11)	3.47 (0.80)	3.46 (0.94)	9.77, $p < .001$**	.21
Deliberate rumination	3.04 (1.14)	3.83 (1.30)	4.49 (0.90)	4.19 (1.03)	41.93, $p < .001$**	.24
Meaning in life	4.05 (0.97)	4.23 (0.79)	4.42 (0.94)	4.46 (0.87)	6.22, $p < .001$**	.17

Note. PTGI-SF = Posttraumatic Growth Inventory–Short Form.
**$p < .01$.

In other words, individuals who are still actively looking for meaning and those who, having worked hard, feel they have already found it, get the highest scores on both the total scale and the PTGI-SF dimensions.

In all cases, effect sizes on all the statistical significance tests (ANOVA) can be considered medium (Cohen, 1988) because they range between .15 and .32. These effect sizes may indicate that the differences found in growth reports are large enough to assume that they are not random.

DISCUSSION

The purpose of this article was to adapt and validate the short form of the PTGI. In general terms, the results of this study lend support to the validity and reliability of the PTGI-SF. This scale allows quick, simple data collection, without losing information, because it maintains the same dimensions as the complete inventory but with half the items. This ability to capture construct dimensionality is confirmed by previous results, providing the research with a thoroughly conceptual and psychometrically robust instrument where the theoretical model is congruent with the empirical data. In this study, as expected, the five-factor model showed a better fit than the alternative one-factor model. These results offer support for the structure originally hypothesized by Tedeschi and Calhoun (1996). Similarly, the results indicated equivalence across the two groups (people reporting situations resulting in the death of a family member or serious accident, and people reporting other traumatic situations), suggesting that the five-factor model is applicable to different samples.

In addition, a finding that researchers have systematically observed about the relationship between PTG and deliberate rumination has been confirmed. As individuals concentrate their efforts on analyzing what happens to them and try to reconstruct the meaning and assumptions changed by a stressful event (Cann, Calhoun, Tedeschi, Kilmer, et al., 2009; Janoff-Bulman, 2006; Tedeschi & Calhoum, 2004), they reach higher levels of growth than when this effort is not present or cognitive processes are governed by intrusive images about these events (Triplett et al., 2012). In this study, we were able to corroborate this relationship between PTG and deliberate rumination, although the data show a moderate and positive relationship between them. In other words, when someone reports growth after a situation that negatively affects his or her life, this growth is usually associated with a systematic cognitive effort that is translated into deliberate repetitive thoughts.

It has also been observed that the search for meaning in life and the reconstruction of assumptions about the world are directly related to growth reports. This does not imply that meaning is reached or assumptions are completely reestablished. Instead, the search for meaning and a cognitive equilibrium allow individuals to grow through their struggle with tough circumstances in life. We found evidence that reaffirms this relationship with positive correlations between PTG and the search for meaning and reports of the presence of meaning. It is important to point out that the relationship with the active search for meaning is stronger than the relationship with having stopped searching for it or reporting that they have already found it. In other words, what again appears to be fundamental is the cognitive work of constructing meaning.

The links among the search for meaning, the reconstruction of basic assumptions, and rumination oriented toward the analysis of an event are coherent with the available evidence (Cann et al., 2011; Janoff-Bulman, 2006; Triplett et al., 2012). This study provides

additional evidence that the construct works properly and constitutes a relevant tool to evaluate the growth reports of individuals who have had to struggle with traumatic circumstances in their lives. These results confirm the idea that, as individuals try to reconstruct meaning (or when they achieve this after hard work), they access levels of growth in different areas. This process allows them to find new satisfactory and enriching possibilities for their lives. This growth results from their struggle with stressful circumstances in their lives.

Although the scale represents a contribution to researchers in this context, the study has some limitations that future surveys should overcome. The first has to do with the nonprobabilistic sample, which makes it difficult to generalize the findings to the national population. Most of the sample was White and well educated and they had a homogeneous socioeconomic status. Future studies should collect data from varied and broad groups of subjects to analyze the results from a relevant number of samples and situations. On the other hand, future studies should examine the fit of other alternative models by conducting new research based on the item response technique (to detect overlapping items and possible portions of the continuum not covered by the items).

Furthermore, the scale scores should be used as an overall measure because some dimensions reveal reliability problems when captured by only two items. The low reliability coefficients of some dimensions may be because of the fact that there are only two items in each dimension; therefore, lower indicators could be expected because of the sensitivity of this coefficient to the number of items considered in the analysis. Thus, this is a general measure of posttraumatic growth that must be used only when the type of sample or the situation demands a shorter instrument than the original scale.

In conclusion, the results were consistent with previous studies and the theoretical framework on posttraumatic growth. The PTGI-SF seems to work well because it has psychometric properties (reliability and validity) that make it a good instrument to measure positive changes after battling with the aftermath of trauma in the Chilean context.

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