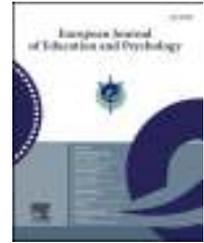




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## Positive effects of communal coping in the aftermath of a collective trauma: The case of the 2010 Chilean earthquake



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### KEYWORDS

Communal coping;  
Collective behaviour;  
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**Abstract** A cross-sectional study examines the relationship between participation in secular demonstrations, spiritual rituals, and communal coping, as well as the question whether these strategies might serve as triggers of post-traumatic growth, and enhance social well-being. A communal coping scale, showing satisfactory structural validity, was administered to a quasi-random sample ( $N=517$ ) of people affected by an earthquake in Chile in 2010. The results indicated that adaptive forms, such as communal reappraisal, regulated emotional expression, communal distraction, and communal searching for social support, were associated with social well-being (SWB) and post-traumatic growth (PTG). Participation in spiritual rituals was specifically related to communal reappraisal and contributed to post-traumatic growth. On the other hand, participation in secular collective gatherings also reinforced post-traumatic growth, as well as social well-being, but not through communal reappraisal. Overall, this study confirmed social functions of collective ritualized activities, which through the reinforcement of in-group interaction, foster individual post-traumatic growth and social well-being of people affected by a collective trauma, like an earthquake. Results are discussed in the framework of a collective positive psychology approach on micro- and macro-social processes of coping and their implications for social well-being.

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**PALABRAS CLAVE**

Afrontamiento  
Comunal;  
Comportamiento  
Colectivo;  
Rituales sociales;  
Crecimiento  
postraumático;  
Bienestar Social

**Efectos positivos del afrontamiento comunal del trauma colectivo: el caso del terremoto de Chile en 2010**

**Resumen** Este estudio transversal examinó las relaciones entre la participación en rituales seculares, rituales religiosos y las estrategias de afrontamiento comunal. Además se evaluó el papel de estas respuestas colectivas como potenciadores del crecimiento postraumático y del bienestar social. Una escala de afrontamiento comunal fue administrada a una muestra cuasi-aleatoria (N = 517) de personas afectadas por el terremoto en Chile en 2010. Los resultados indicaron que las formas adaptativas de afrontamiento comunal, tales como la reevaluación, la expresión emocional regulada, la distracción y la búsqueda de apoyo social se asociaron al bienestar social y al crecimiento postraumático. Se constató que la participación en rituales también reforzó el crecimiento postraumático y el bienestar social, de una manera directa en el caso de rituales seculares, y a través de la reevaluación comunal en el caso de rituales religiosos. Globalmente, los resultados confirmaron las funciones sociales de las actividades colectivas ritualizadas, las cuales mediante el refuerzo de las interacciones entre los miembros de los grupos o comunidades aumentan el crecimiento postraumático y el bienestar social de los afectados por un trauma colectivo como un terremoto. Los resultados se discuten desde la perspectiva de la psicología positiva colectiva, acentuando el papel de los procesos sociales de afrontamiento en el bienestar social.

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**Introduction**

A traumatic situation can temporarily or permanently alter people's capacity to cope and their concept of self, stripping life of meaning and pleasure (Cury, 2007). It can break the bonds in the relationship between a person and their community and the firmly held belief that people are good and that their actions contribute to the common good (Janoff-Bulman, 1992; Keyes, 1998). Nevertheless, it has been widely observed that traumatic experiences present an opportunity for significant growth (Helgeson, Reynolds, & Tomich, 2006; Tedeschi & Calhoun, 1996). People tend to mitigate the effects of the disaster with their capacity for organization, communication and social support. These interactive communal processes promote an increase of positive affectivity and a decrease of negativity, improvement of positive relationships with others and reinforcement of psychosocial well-being in general (Gasparre, Bosco, & Bellelli, 2010; Tang, 2006). Defending common interests helps people to find meaning in the experience they just have had (Silver, Boon, & Stones, 1983; Tait & Silver, 1989) and to reinforce positive beliefs about themselves, others and society (Poulin, Silver, Gil-Rivas, Holman, & McIntosh, 2009).

Furthermore, although studies on traumatic experiences of natural disasters have placed more emphasis on the negative and psychological sides than on the positive and psychosocial ones (Bonanno, Brewin, Kaniasty, & La Greca, 2010), people's reactions are often collective and of positive valence. In a survey held after the earthquake in Chile in 2010 in over 22,000 homes from the affected provinces, 50.5% of respondents declared to use individual strategies, while 14.2% collective ones. Collective strategies were more commonly used in the most affected regions (39.8% Biobío and Maule 23.6%). Regarding the type of activity, 39.3% of the people organized themselves collectively in order to

get water and food supplies and 37.9% did so to increase safety in their community (Larrañaga & Herrera, 2011). Furthermore, 89.8% indicated that they had received support from neighbours, both instrumental, like receiving water, food, firewood (44.1%), protection and shelter (46%), and emotional (39.5%) (Díaz, 2011).

Therefore, we argue that collective responses as communal coping and participation in collective ritualized activities are functional because they reduce the impact of trauma (Villagrán, Reyes, & Włodarczyk, 2014) and may foster intrapersonal, interpersonal and social positive responses, like increase in altruism, social support, enhanced cohesion, and reinforcement of positive social beliefs and values (Vázquez & Páez, 2011). We will examine the features of collective responses that could explain these positive outcomes.

**Communal coping as a collective response**

While the research on coping was primarily focused on individuals' capacities to overcome stressful circumstances (Folkman & Lazarus, 1988), natural disasters constitute a context in which individual and group efforts are likely to be combined (Hobfoll, Schroder, & Malek, 2002). Those collective interactions can be conceived as communal coping or strategies adopted by the community to cope with the effects of the event. *Communal coping* is a process in which the appraisal and actions to resolve a problem occur within the context of social relationships. People perceive the stressful event to be "our" problem and responsibility rather than "my" or "their" problem and responsibility (Lyons, Mickelson, Sullivan, & Coyne, 1998). This distinguishes it from coping through social support, which is generally measured in terms of individual strategies that are applied with the help of others or for others (Little,

Kluemper, Nelson, & Gooty, 2011), and do not imply that the problem is tackled collectively. The main features of communal coping are: (a) shared collective experience: the stressful situation must be experienced collectively; (b) shared appraisal: thinking and acting as if the stressor were ‘our problem’; (c) social sharing: communication is necessary to address the stressful situation and to generate a shared appraisal; (d) mobilization of social relations: people will have to share responsibilities and act jointly to face the situation (Lyons et al., 1998).

## Communal coping strategies

Recent reviews and meta-analyses have concluded that coping dimensions are unstable and depend on the type of stress and sample, although there is some agreement about the existence of second-order dimensions such as adaptive and maladaptive coping (Campos, Iraurgui, Páez, & Velasco, 2004; Skinner, Edge, Altman, & Sherwood, 2003; Soriano, Franco, & Justo, 2009). Adaptive forms of coping include direct coping, reappraisal, regulated emotional expression and non-repressive self-control. The maladaptive dimension includes rigid dysfunctional approach coping (rumination, venting or emotional discharge) and rigid avoidance, based on social isolation, inhibition and emotional suppression (Carver & Connor-Smith, 2010; Carver, 2011; Connor-Smith & Flachsbart, 2007).

On the basis of the review of the intrapersonal (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Web, Miles, & Sheeran, 2012) and interpersonal (Little et al., 2011) coping families, and following collective validation studies, several communal coping strategies have been identified (Villagrán et al., 2014). The following are of particular note:

- a) Aimed at changing the situation and social relationships. *Direct instrumental coping*: direct actions aimed at resolving or changing the stressful situation, involving a degree of risk for the group; *Social support*: searching for contact, instrumental support or advice and emotional support in the group;
- b) Aimed at avoiding the situation. *Avoidance*: voluntary disconnection or escape that would imply efforts to detach or distance oneself from the causes of stress. In this way the group tries to ignore what has happened;
- c) Aimed at redirecting attention and cognitive change. *Distraction*: active attempts to deal with the stressful situation through a pleasant activity, for example: preparing meals, doing exercise together, going out for a walk, etc. *Positive reappraisal*: active attempts to change or modify the evaluation of the stressful situation, with the aim of salvaging the positive aspects of the experience from the negative ones. *Spiritual and secular rituals*: planned symbolic actions that can take place during periods of transition or crisis.
- d) Aimed at regulating emotional responses. *Self-control*: active attempts or efforts to regulate group based emotions and behaviours (i.e. inhibition and self-comforting). *Emotional expression*: expressing and sharing emotions with others.

The dimensions listed are not exhaustive and may vary depending on the context or situation, although they are in line with the main categories of coping strategies (Skinner et al., 2003; Web et al., 2012).

Research into communal coping covers different types of massive traumatic events, including natural disasters (Espinosa, Ferrándiz, & Rottenbacher, 2011; Kaniasty & Norris, 1993), and focus on coping through participation in rituals and demonstrations, such as funeral rituals (Gasparre et al., 2010; ODHAG, 1998) and political demonstrations (Páez, Basabe, & Rimé, 2005). These collective actions facilitate emotional expression and social sharing of emotions. In fact, participation in collective gatherings or demonstrations and rituals increases well-being because it reinforces positive affect, self-esteem, perceived social support and fusion of personal and collective identities, as well as positive social beliefs (Páez & Rimé, 2014; Prati & Pietrantonio, 2009). Along the same lines, participation in commemorative rituals was shown to have long term effects on group cohesion in victims of collective trauma (Hawdon & Ryan, 2011). Similarly, participation in religious and secular rituals was associated to posttraumatic growth (Gasparre et al., 2010), enhanced positive affect, and social integration (Páez, Basabe, Ubbillos, & González, 2007) in victims of mass violence. Furthermore, participation in collective gatherings is considered to further reinforce personal and communal adaptive coping strategies. For instance, participation in celebrations (McRae, Heller, John, & Gross, 2011) or demonstrations (Páez et al., 2007) was related to adaptive coping strategies like reappraisal, altruism and direct coping.

The principal aim of this study is to verify whether communal coping and participation in collective ritualized activities are functional, reducing the impact of collective trauma. First, we expect that participants will report medium high level of communal coping (H1). Next, it was predicted that the frequency of participation in collective secular gatherings, spiritual rituals, would be related to adaptive forms of communal coping and particularly to reinforce social well-being and posttraumatic growth. More precisely, participation in demonstrations and rituals will be related to adaptive communal coping strategies, like reappraisal, regulated emotional expression, distraction, searching for social support and low inhibition and group isolation (H2). In addition, these micro-social strategies will constitute a way of enhancing posttraumatic growth and rebuilding well-being (H3).

## Method

### Participants

Participants in the study were in total 557 volunteers who had personally experienced the devastating earthquake of 8.8 degrees on the Richter scale which occurred in Chile on February 27, 2010. All of the volunteers were from the Bio Bio region, which was the most affected one during the earthquake. The sample was quasi-random and was obtained in 2013, and consisted of 63.8% women, with an age range between 18 and 74 ( $M=27.02$ ,  $SD=12.76$ ). Most of the participants were from the towns of Concepción (50.7%) and

San Pedro de la Paz (16.4%). The majority of the participants had a university degree (51.5%), followed by those with primary or secondary education (29.3%) and a technical education degree (17.6%). A sub-sample answered a longer version of the survey, including Keyes Social Well-Being scale. This sub-sample consisted of 225 women and 103 men, aged ranging between 18 and 30 years ( $M = 19.82$  years,  $SD = 1.95$ ). About 57% of participants reported personal or family property being damaged or destroyed as a result of the earthquake.

## Measures

- *Participation in collective gatherings, demonstrations, secular and spiritual rituals.* Participation in collective gatherings was assessed by two items: "We attended manifestations and gatherings", "We organized commemorations and ceremonies" ( $\alpha = .57$ ). Furthermore, participation in spiritual rituals was assessed using these two items: "We attended Masses and religious ceremonies", "We prayed" ( $\alpha = .73$ ). The range of responses was from 0 (*never*) to 3 (*always*).
- *Communal Coping Scale.* The scale measures the frequency with which different coping strategies are used. The design of the communal coping scale was based on the Ways of Coping Scale (Folkman & Lazarus, 1988), the Measure of Affect Regulation Styles (Larsen & Prizmic, 2006) and Coping Schemas Inventory-Revised (Wong, Reker, & Peacock, 2006). The items were reworded to make them plural. In total 67 collective coping items were included and tested in a pilot study with 35 postgraduate students who had suffered a shared stressful experience in recent months. Next, the 23 most reliable items with the highest content validity were selected, representing different families of coping strategies. This new instrument was submitted to a panel of experts and underwent a second pilot test with 74 adults, consisting of 37 students paired with a member of their close family who had experienced the same stressful situation, to observe any convergence in the strategy used. The final 23 items were grouped into five communal coping dimensions: distraction, emotional expression, positive reappraisal, emotional or informational and altruistic social support and self-control, or inhibition and group isolation. Respondents indicated on a standard 4-point Likert scale ranging from 0 (*never*) to 3 (*always*), the extent to which the items described their communal coping strategies.
- *Short Form of the Posttraumatic Growth Inventory (Cann et al., 2010).* The scale consists of 10 items with response options ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). In this brief form, each of the domains of posttraumatic growth is represented by two items. However, as suggested by the authors, a total score is considered to represent a more general sense of PTG. The internal consistency for the questionnaire was very satisfactory,  $\alpha = .93$ .
- *Social Well-Being Scale.* A total of 15 items from the short Spanish version of Social Well-Being Scale (Bobowik, Basabe, & Páez, 2015; Keyes, 1998) were used to assess five dimensions of participants' SWB: social contribution

( $\alpha = .779$ ), social integration ( $\alpha = .601$ ), social actualization ( $\alpha = .762$ ), social acceptance ( $\alpha = .580$ ), and social coherence ( $\alpha = .571$ ). Each subscale – as in the original short version of the scale – consisted of three items. Responses ranged from 1 (*completely disagree*) to 5 (*fully agree*). Satisfactory reliability was also obtained for the whole scale ( $\alpha = .77$ ).

## Procedure

The interviews were conducted between September and October 2013. Each participant was given a letter of informed consent that included issues of confidentiality, and explained the objectives of the study and its implications. The confidentiality of participant data was said to be fulfilled through anonymity. All participants were asked to complete the instruments in relation to their experience of the situation during the earthquake in February 2010.

## Data analysis

First, in order to define the structure of the *Communal Coping Scale* maximum likelihood analysis was performed on the 23-item scale. Next, Confirmatory Factor Analysis (CFA) was used to confirm the existence of the proposed dimensions of communal coping. In addition descriptive statistics were calculated. Convergent validity of the scale was tested by examining correlations between participation in collective gatherings and spiritual rituals. Predictive validity was tested by examining correlations between communal coping and posttraumatic growth and well-being. Furthermore, structural equation modelling (SEM) with Mplus 6.11 was used to specify the relation of participation in secular and spiritual rituals, the use of communal coping strategies and posttraumatic growth and well-being.

To check the fit of the models, in addition to the chi-squared test, the following indexes were considered: CFI (*Comparative Fit Index*) and TLI (*Tucker-Lewis index*), whose values above .90 are considered acceptable, and also RMSEA (Root Mean Square Error of Approximation), with a cut-off value close to .06 (Hu & Bentler, 1999) or a stringent upper limit of .07 (Steiger, 2007). In the presentation of the results the standardized solution is shown. All the coefficients represented by continuous arrows in the graphs are statistically significant, while the dashed lines indicate effects that are not statistically significant for  $p < .05$ . The data had almost no missing values (<1%) so they were considered missing at random.

## Results

### Communal coping: psychometric properties

The results of the preliminary likelihood analysis with Oblimin rotation with the number of factors set to be extracted from three to five, revealed that five-factor solution obtained the best fit to the data [ $\chi^2$  (143,  $N = 556 = 324.098$ ,  $p < .001$ ; CFI = .946; TLI = .908; RMSEA = .046 (90% CI [.039, .053])]. Eight items were dropped due to low factor loadings ( $\leq .30$ ). In order to

**Table 1** Descriptive statistics of items included in the Communal Coping Scale.

Dimension	Item	M	SD
<i>Communal Coping strategies</i>			
Distraction	1. We have tried to be together and do things to enjoy ourselves and relax (parties and group activities) [Tratamos de estar juntos y hacer cosas para divertirnos y relajarnos (fiestas y actividades de grupo)]	1.68	1.09
	2. We have gone out for a walk, exercised, etc. to feel better [Hemos salido a pasear, hacer ejercicio, etc. para estar mejor]	1.28	1.08
	3. We have eaten and drunk together to feel better [Para sentirnos mejor hemos comido y bebido juntos]	1.82	1.03
Emotional expression	4. We have told or expressed one another how we feel [Nos decíamos o expresábamos unos a otros cómo nos sentimos]	1.67	.98
	5. We have talked to other people about what happened and we have shared our thoughts and feelings [Hemos hablado con otras personas de lo ocurrido y hemos compartido nuestros pensamientos y emociones]	2.00	.93
Self-control or inhibition and group isolation	6. We avoid being with other groups of people who have not lived our experience. We isolated ourselves [Evitamos estar con otros grupos de personas que no vivían nuestro problemas, nos aislamos]	.39	.78
	7. We have tried to keep our emotions to ourselves and do not show them in front of others [Hemos intentando guardar y ocultar nuestros sentimientos ante otros]	.85	.88
	8. We have not talked about things that went wrong [No hablábamos sobre las cosas que iban mal]	.94	.88
Emotional or informational and altruistic social support	9. Everyone has tried to speak to people who could do something specific to solve our problem [Cada uno ha tratado de hablar con personas que podrían hacer algo concreto para resolver nuestro problema]	1.08	.98
	10. We have accepted the likability and understanding of other people who did not experience our situation [Hemos aceptado la simpatía y la comprensión de otras personas que no vivían nuestra situación]	1.98	1.01
	11. We have spoken to other people who had a similar problem to see what they did [Hemos hablado con otras personas que tenían un problema similar para saber que hicieron]	1.69	1.02
Positive reappraisal	12. We have offered other people our experience from the past, to help others to cope with the problem [Hemos puesto a disposición de los demás nuestra experiencia del pasado, para ayudar a otros a enfrentar el problema]	1.81	1.01
	13. We have tried to find the positive side of the situation for the group [Hemos tratado de encontrar el lado bueno de la situación para el grupo]	2.07	.95
	14. As a result of the situation, we have grown and improved as a group [Como resultado de la situación hemos crecido y mejorado como grupo]	1.90	.97
	15. We have discovered important things in life [Hemos descubierto cosas que son importantes en la vida]	2.33	.89
<i>Participation in collective secular gatherings and spiritual rituals</i>			
Spiritual rituals	1. We have prayed [Hemos rezado]	1.56	1.20
	2. We have attended masses or religious ceremonies [Hemos acudido a las misas o ceremonias religiosas]	.91	1.11
Collective gatherings	3. We have gone to demonstrations or gatherings [Hemos acudido a manifestaciones o concentraciones]	.57	.88
	4. We have organized or participated in joint actions (commemorations or non-religious mourning ceremonies) [Hemos organizados o participados en acciones conjuntas (fiestas de conmemoraciones o ceremonias de duelo no religiosas)]	.36	.70

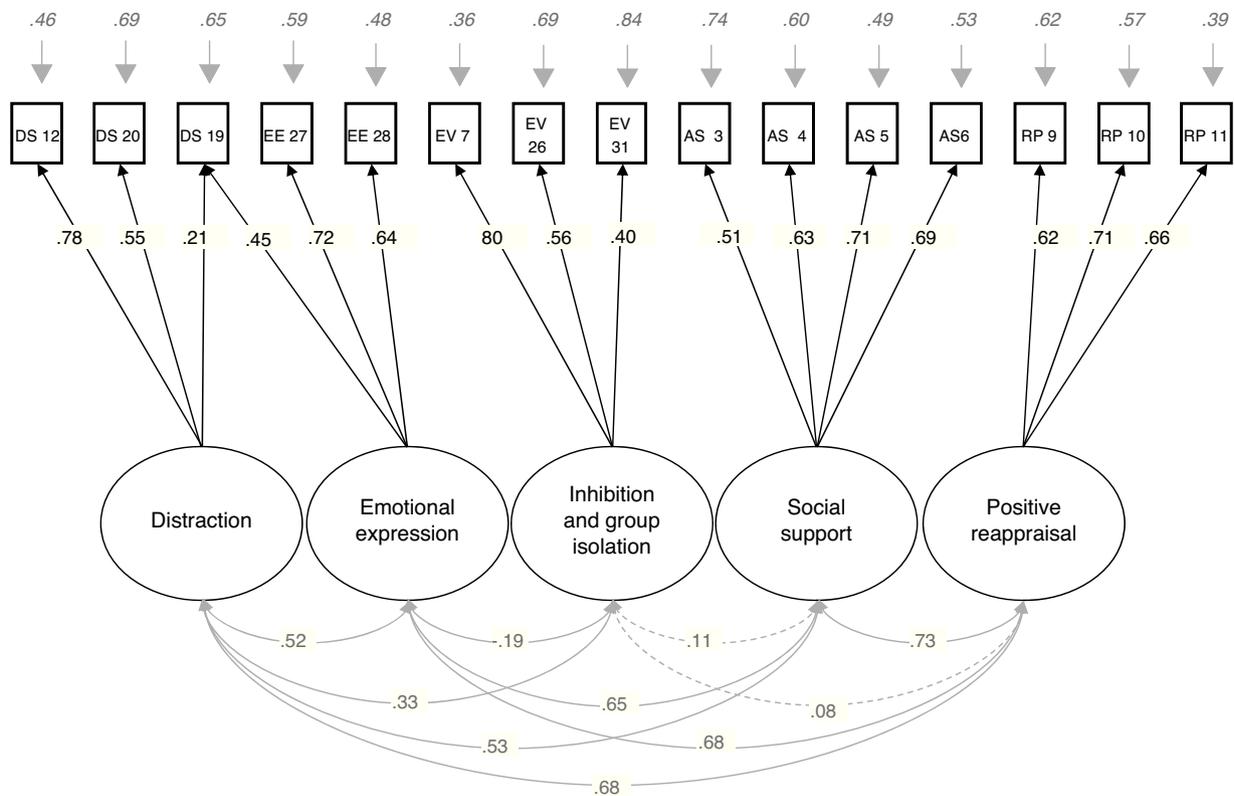


Figure 1 Communal coping strategies – Confirmatory Factor Analysis.

confirm the measurement model of communal coping scale we performed a CFA with five latent dimensions – allowing the covariances among the proposed latent dimensions to be freely estimated. Means and standard deviations of all the items composing the *Communal Coping Scale* are presented in Table 1.

The baseline model on the remaining 15 items did not reach a satisfactory fit so one item was allowed to load on more than one factor (see Table 1: Item 3. – *We have eaten and drunk together to make us feel better*). The final model supported the expected five-factor solution (see Figure 1), and showed satisfactory fit to the data [ $\chi^2(79, N=556)=192.761, p<.001$ ; CFI=.943; TLI=.924; RMSEA=.051 (90% CI [.042, .060])].

Internal consistency was acceptable and inter-scale correlations ranged from not significant to moderate (see Table 2) indicating that each subscale measures distinct construct. Furthermore, bivariate correlations using factor scores of the five dimensions described in the CFA revealed small to moderate significant associations between participation in collective gatherings and spiritual rituals and all the communal coping strategies, providing evidence for convergent validity. Regarding to predictive validity, as expected four forms of adaptive communal coping correlated with SWB and PTG. In addition, the alleged maladaptive dimension of avoidance and venting did not significantly correlate with SWB and was rather weakly associated with PTG. Furthermore, participation in collective gatherings and spiritual rituals also correlated with SWB as expected. Religious rituals showed stronger association with

PTG than secular collective gatherings, but both showed a similar association with SWB (Table 2).

### Frequency of communal coping and participation in collective gatherings and spiritual rituals

A large proportion of people (40.3%) declared participation in religious rituals (praying or participating in religious rituals), while 27.8% of participants performed secular rituals and collective gatherings, at least once. Regarding the frequency of use of different communal coping strategies, whether self-control, or inhibition and group isolation, 37.5% of participants reported having used them at least once, whereas more adaptive strategies were far more frequent: communal positive reappraisal (92.5%), emotional expression (80.4%), emotional or informational and altruistic social support (73.8%), communal coping by distraction (69.2%). Finally, PTG was reported on a middle-high level ( $M=2.90, SD=1.32$ ).

### Participation in social mobilizations and spiritual rituals; communal coping strategies, posttraumatic growth and social well-being

To contrast the hypothesis of the simultaneous relationship between participation in social mobilizations and spiritual rituals, coping strategies and posttraumatic growth, a model considering social participation and coping strategies as predictors of PTG was estimated. Fig. 2 shows the relation

**Table 2** Correlations between communal coping strategies, PTG-SF (*N* = 557) and SWB (*N* = 317).

	$\alpha$	<i>D</i>	EE	SI	SS	PR	CG	SR
Distraction	.651	1						
Emotional expression	.672	.678**	1					
Self-control or inhibition and group isolation	.498	.065	.009	1				
Emotional or informational and altruistic social support	.745	.429**	.487**	.089*	1			
Positive reappraisal	.712	.480**	.527**	.013	.528**	1		
Collective gatherings	.568	.200**	.116**	.204**	.206**	.110**	1	
Spiritual rituals	.733	.262**	.281**	.110**	.245**	.290**	.208**	1
PTG-SF	.923	.271**	.282**	.122**	.284**	.327**	.146**	.409**
Social well-being	.770	.132**	.179**	.032	.243**	.251**	.155**	.225**

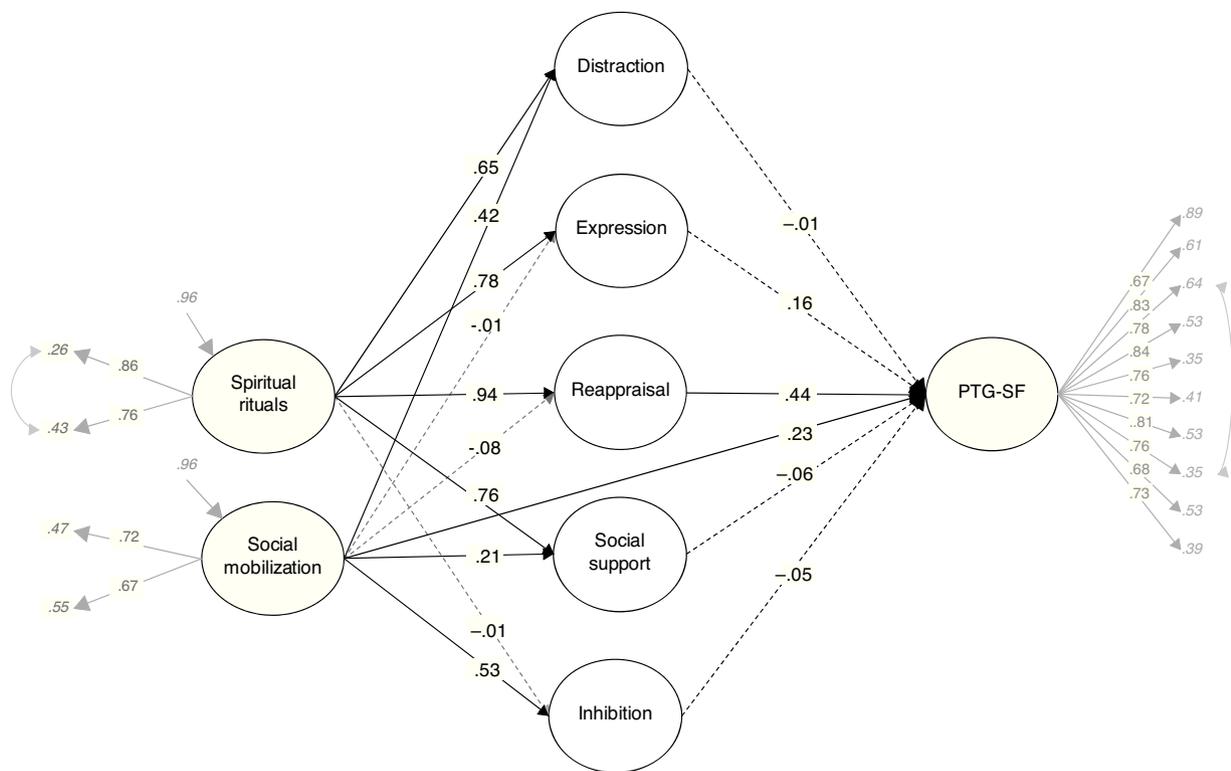
\* *p* < .05.  
 \*\* *p* < .01.

between the variables included in the model, with a satisfactory fit of the model to the data [ $\chi^2$  (358, *N* = 556) = 904.699, *p* < .001; CFI = .915; TLI = .903; RMSEA = .052 (90% CI [.048, .057])].

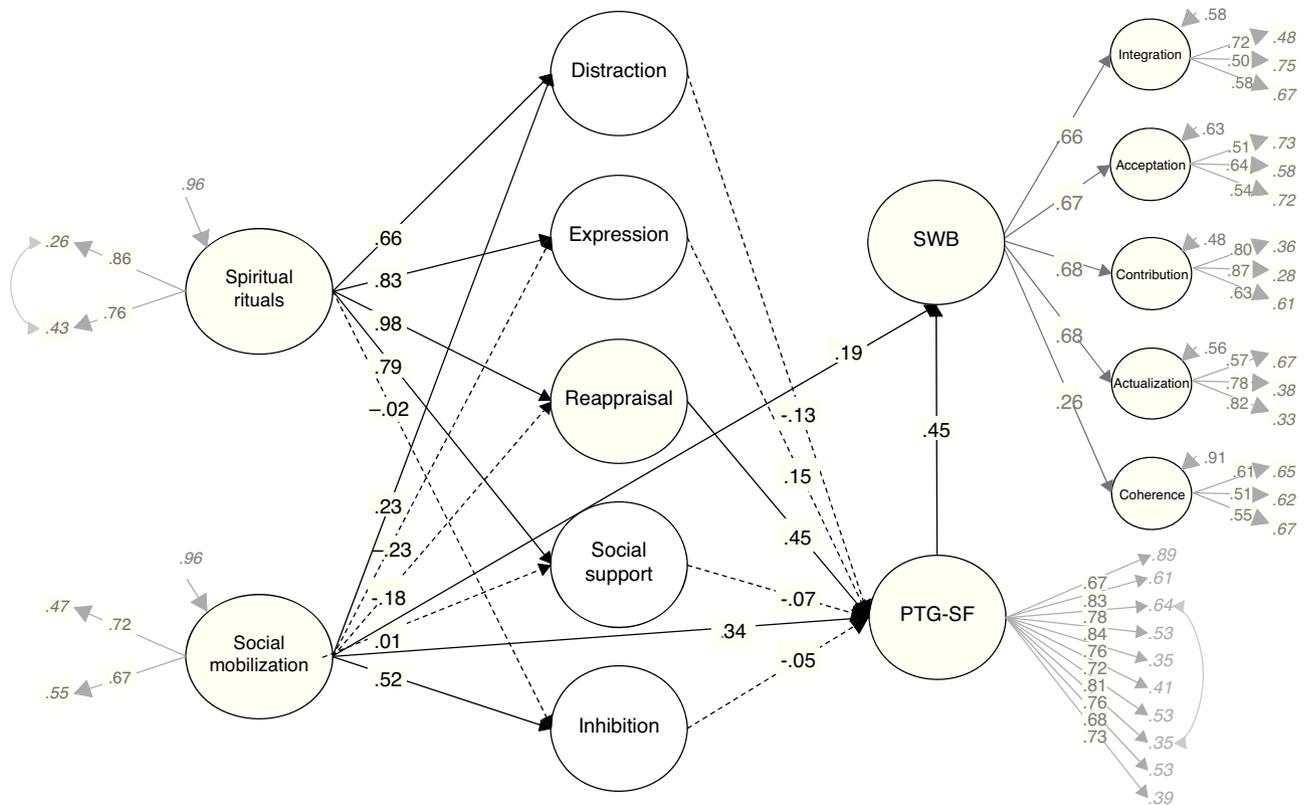
Confirming that social gatherings and rituals reinforce adaptive micro-social communal coping strategies, it was shown that participation in spiritual rituals was related to distraction, emotional expression, positive reappraisal and social support. This hypothesis was also partially supported for participation in secular collective gathering, which were related to strategies like distraction and social support, self-control and in-group isolation. Communal reappraisal and participation in collective gatherings were significantly related to posttraumatic growth. In addition, based on

the estimation of indirect effect, spiritual rituals showed to enhance PTG through positive reappraisal (*B* = .414, *SE* = .162, *Est. / SE* = 2.560, *p* = .01). No indirect effects from secular collective gatherings to PTG through positive reappraisal were found.

In order to confirm the hypothesis of the association of participating in collective gatherings or spiritual rituals, and different coping strategies and posttraumatic growth, a model with social well-being as a focal dependent variable was developed using the data obtained in the second round. The proposed model obtained a reasonable fit [ $\chi^2$  (875, *N* = 332) = 1610.363, *p* < .001; CFI = .905; TLI = .897; RMSEA = .039 (90% CI [.036, .042])]. As it can be seen in Fig. 3, the model confirms the predictions of the previous



**Figure 2** Participation in secular collective gathering and spiritual rituals, communal coping strategies and posttraumatic growth.



**Figure 3** Participation in secular collective gathering and spiritual rituals, communal coping strategies and posttraumatic growth and the impact on social well-being.

model (estimated with the whole sample), showing the same relations between the predictors and posttraumatic growth, and a direct effect of participation in secular collective gatherings on PTG and on SWB.

In addition, indirect effects of participation in secular collective gatherings on SWB through PTG ( $B = .112$ ,  $SE = .041$ ,  $Est./SE = 2.767$ ,  $p = .006$ ) and of religious rituals through positive reappraisal and PTG on SWB ( $B = .197$ ,  $SE = .084$ ,  $Est./SE = 2.361$ ,  $p = .018$ ) were found.

## Discussion

Overall results of the study provide evidence that shared stressful life circumstances, as being affected by an earthquake, are a context in which people engage in joint actions and communal coping in order to successfully cope with the situation (Hobfoll et al., 2002; Kaniasty & Norris, 1993; Lyons et al., 1998). Around 30% of the sample reported participation in collective gatherings and joint actions and about 40% in religious public rituals. These findings are congruent with a large survey which found that globally 22% of the people (36.9% in case of the most affected region Bío Bío) coped with the earthquake using collective forms of coping and that around 90% received instrumental and emotional support from their neighbours (Díaz, 2011; Larrañaga & Herrera, 2011).

Communal coping strategies were assessed by a multidimensional scale that emphasizes on collective agency and aims to provide a broader understanding of responses

to shared problems. The study results supported internal consistency of the proposed subscales. Furthermore, confirmatory factor analysis has supported the proposed five-factor model and indicated that each subscale measures a distinct construct. Four of the proposed dimensions are supposed to be adaptive and one (composed of avoidance and venting) is considered as potentially maladaptive. One item is loaded in more than one factor (*We have eaten and drunk together to make us feel better*) as it appears in emotional expression and distraction, probably reflecting the central role of sharing meals and drinks in the collectivistic Chilean culture. The inter-correlations among the five dimensions were mostly moderate confirming that people would rather use different coping strategies.

Furthermore, confirming that communal coping helps to increase positive collective responses, correlations show the strength of the link between reappraisal, distraction, social support, participation in collective secular gatherings and religious rituals and PTG, and social well-being. Self-control or inhibition and group isolation correlates only with PTG but not with social well-being. A negative, but non-significant association confirms partially the maladaptive role of this dimension.

Correlations and SEM confirm that participation in secular collective gathering is related to posttraumatic growth, which is congruent with previous studies (Gasparre et al., 2010; Páez et al., 2007). Furthermore, participation in spiritual rituals enhances PTG even more than participation in secular collective gatherings, probably because of the importance of religiosity in Chilean culture, and the fact

that a systematic social movement did not appear in the aftermath of catastrophe.

On the other hand, participation in both secular and religious rituals was not negatively associated with less adaptive ways of coping as expected, and our results did not confirm that collective gatherings decrease suppression or inhibition. However, we did find that collective participation increases reappraisal (McRae et al., 2011). Furthermore, the social isolation and avoidance dimension is related to PTG, which is congruent with studies showing that maladaptive forms of coping like denial are related to PTG (Prati & Pietrantonio, 2009). A similar process probably occurs at communal level.

In addition, the frequency of participation in collective secular gatherings and spiritual rituals was also positively related to social well-being. In this case the associations were of similar strength. In addition, participation in secular gatherings showed a significant direct effect on social well-being. These results are important, because they confirm long term positive effects of the participation in collective gatherings on social well-being (Hawdon & Ryan, 2011).

Congruently with our hypothesis, results of this study showed that spiritual rituals were related to adaptive communal coping strategies, like reappraisal, regulated emotional expression, distraction, searching for social support and low avoidance and venting. Quite similar profile was found for participation in secular collective gatherings which was related to strategies such as distraction and social support, but also to self-control and avoidance. These results confirmed that participation in collective gatherings, religious and secular, increases potential for social support, promotes pleasant collective scripts, and also helps to control and suppress social sharing of negative emotions, reinforcing in-group interaction and social cohesion. However, contrary to the results of McRae et al. (2011) and Páez et al. (2007), participation in secular demonstrations did not reinforce reappraisal or communal emotional expression.

Finally, only participation in secular collective gatherings and positive communal reappraisal were direct predictors of PTG. Communal reappraisal mediated the relationship between participation in spiritual gatherings, PTG, and social well-being. Those results are consistent with studies showing that positive emotional responses mediate between participation in collective gatherings and improved social climate (Páez & Rimé, 2014), confirming the central role of positive reappraisal in coping with societal issues (Halperin, Porat, Tamir, & Gross, 2013).

## Conclusions

This study confirmed that communal coping was a common response, and that the scale measuring it showed satisfactory structural validity. As results show, communal adaptive forms such as communal reappraisal, regulated emotional expression, distraction and searching for social support, were associated to social well-being and post-traumatic growth. These communal coping strategies were associated with participation in collective gatherings and rituals. Communal reappraisal was specifically related to posttraumatic growth and associated to spiritual rituals, probably due to the religious characteristic of the Chilean

culture. In addition, secular collective gatherings reinforced social well-being and posttraumatic growth. Globally, these findings confirmed the social functions of collective secular and religious gatherings, reinforcing in-group interactions and contributing to social cohesion, especially in a situation of collective trauma as it is an earthquake.

This study presents some limitations. Mainly, it is retrospective and that the data were collected three years after the earthquake. However, it is important to stress that the sample was composed exclusively of people affected by an earthquake that drastically affected community life. Furthermore, more complex scales of communal coping and longitudinal studies are necessary to expand and confirm our results.

## Conflict of interest

The authors of this article declare no conflict of interest.

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