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Perceived Posttraumatic Growth and Its Psychosocial Predictors During Two Consecutive COVID-19 Lockdowns

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This study seeks to expand previous research by examining (a) the prevalence rates of posttraumatic growth (PTG) and its potential predictors (posttraumatic stress symptoms [PTSS], perceived stress, adaptive coping strategies, social support) during the first and second lockdown in the general population of Greece, and (b) the mediating role of the stress indicators (PTSS/perceived stress) in the relationship between positive reframing and PTG. A sample of 1,361 participants (1.009 in the first lockdown and 352 in the second lockdown) completed the Posttraumatic Stress Disorder Checklist for *DSM-5* (PCL-5), The Perceived Stress Scale (PSS-10), the Posttraumatic Growth Inventory, the Brief Coping Orientation to Problems Experienced Inventory and the ENRICHD Social Support Instrument (ESSI). Moderate levels of PTG were found during both lockdowns. PTG did not significantly increase during the second lockdown. PTG was associated with PTSS during the first lockdown and with perceived stress during the second one; these two stress indicators partially mediated the positive reframing—PTG relationship in the first and second lockdown, respectively. Both adaptive and maladaptive coping strategies predicted PTG during the first lockdown, whereas only adaptive coping strategies predicted PTG during the second lockdown. Perceived social support, emotional during the first lockdown and instrumental during the second one, predicted PTG during the two lockdowns, respectively. The results of this study may enhance our understanding of PTG and its predictor to inform the design of interventions moving beyond growth cognitions into growth actions.

Keywords: coronavirus, stress, positive appraisal, spirituality, coping responses

Coronavirus disease 2019 (COVID-19), one of the major global public health threats in the 21st century, resulted in the establishment of escalating containment measures worldwide to reduce virus transmission, including lockdowns and restrictions on commercial, educational, religious, and social activities. Greece did not spare from this tremendous global challenge. Over 10.7 million Greek citizens forcibly isolated themselves from mid-March to mid-May 2020 (the first lockdown) and from November 7, 2021 to May 14, 2021 (the second lockdown).

Substantial evidence has suggested that physical distancing measures, social isolation, and daily routine loss have affected the mental health of people (Wang et al., 2020). Existing research has indicated that stress, anxiety, depression, sleep problems, and posttraumatic stress disorder are the most consistent negative consequences of the lockdown (for reviews and meta-analysis, see Cénat et al., 2021; Nochaiwong et al., 2021). However, a growing body of empirical research has also revealed that major negative life events can precipitate positive life changes, a phenomenon described as posttraumatic growth (PTG; Tedeschi & Calhoun, 2004). Following people's struggle with challenging and/or life-threatening circumstances (e.g., disasters, deadly viruses), PTG may widen their focus beyond difficulties and help them not only survive but also thrive (Tedeschi & Calhoun, 1996). Such struggle may enable people to identify meaning in interpersonal relationships, change their priorities, acquire a greater sense of personal strength, enrich their spiritual life, and increase their appreciation of small things in life (Tedeschi & Calhoun, 2004). Both theory and research indicate that cognitive processing or reprocessing of what has happened plays a crucial role in the process of PTG (Calhoun & Tedeschi, 2006).

During the early stages of the COVID-19 pandemic, PTG has been examined in various countries worldwide, such as China (Mo et al., 2022; Yu et al., 2022), the United States (Zhou et al., 2020), Sweden (Xie & Kim, 2022), Greece (Kalaitzaki, 2021; Koliouli &

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Canellopoulos, 2021), Spain (Prieto-Ursúa & Jódar, 2020), Saudi Arabia (Arnout & Al-Sufyani, 2021), and Poland (Tomaszek & Muchacka-Cymerman, 2020), and in specific population subgroups such as health care workers in Greece (Kalaitzaki & Rovithis, 2021), nursing students in Turkey (Yıldız, 2021), nurses in Taiwan (Chen et al., 2021) and China (Mo et al., 2022). Evidence suggests that as long as COVID-19 is perceived as a stressful and potentially traumatic event, a significant proportion of people can achieve PTG (i.e., 39%–89%; cited in Asmundson et al., 2021). However, findings are limited to small samples and/or one point of measurement, since most studies have examined PTG within the first few weeks or months from the onset of the pandemic (e.g., Frazier et al., 2001; Kalaitzaki, 2021). Measuring PTG longitudinally or at least repeatedly is important since PTG is a dynamic process and is assumed to develop over a period of time (Tedeschi & Calhoun, 2004; Van der Hallen & Godor, 2022; Zoellner & Maercker, 2006) with varied prevalence rates across different timepoints (Asmundson et al., 2021; Kalaitzaki et al., 2020, 2022; Na et al., 2021). The few available longitudinal studies have been inconclusive about the time that PTG needs to develop, some suggesting it may initiate as early as 2 weeks after trauma and rise steadily over time (Frazier et al., 2001), and other studies suggesting stable PTG levels during the first months and rise over a period of 1.5–2 years (Danhauer et al., 2015; Manne et al., 2004). Variability in change trajectories suggests the need to examine PTG over time. Therefore, the main aim of this study was to examine PTG changes among the general population across two consecutive lockdowns.

A better understanding of the factors that have the potential to promote PTG was another aim of this study. This piece of research is significant for developing effective interventions to strengthen PTG during long-term stressful and potentially traumatic events such as the current pandemic. Previous studies have shown that some of the most examined psychosocial factors that have been associated with PTG are posttraumatic stress symptoms (PTSS; Boehm-Tabib & Gelkopf, 2021; Kalaitzaki, Tamiolaki, et al., 2022), perceived stress (Asmundson et al., 2021; Coroiu et al., 2016), coping strategies (Kalaitzaki & Rovithis, 2021), and social support (Zhou et al., 2020). Tedeschi and Calhoun (2004) have suggested that PTG is highly dependent on whether an event is perceived as stressful. Most researchers have shown that high levels of PTSS or distress decrease the likelihood of PTG to occur, while moderate levels of PTSS or stress increase the chance (Coroiu et al., 2016; Tomaszek & Muchacka-Cymerman, 2020). Inconclusive findings on the relationship between PTG and distress indices have also been reported, with studies showing a positive relationship (Kalaitzaki, Tamiolaki, et al., 2022), a negative relationship (Frazier et al., 2001), a reverse U-shaped curvilinear relationship (Jian et al., 2022) or no relationship at all (Eisma et al., 2019; Zięba et al., 2019). Besides, most studies have been limited in examining PTSS (or Posttraumatic Stress Disorder [PTSD]) and not a general distress indicator. Research has shown that general stress, as a result of other causes (e.g., financial hardships, relationship dissolution), related to COVID-19 in varied degrees (or not related at all), may also promote PTG (Doherty & Scannell-Desch, 2022). Besides, since not all people who perceive COVID-19 as a stressful experience necessarily exhibit PTSS, the examination of both types of distress was considered important. By the writing of this article, no study as yet has examined the association between PTSS, perceived stress, and PTG during two lockdowns.

Research has shown that coping strategies, defined as cognitive and behavioral ways people use to manage stressful situations, have been positively associated with PTG (Boals & Schuler, 2018). Studies have grouped coping strategies into adaptive (active coping, instrumental support, planning, acceptance, emotional social support, humor, positive reframing, and religion) and maladaptive (behavioral disengagement, denial, self-distraction, self-blaming, substance use, and venting; Meyer, 2001). The association between coping strategies and PTG has not yet been sufficiently studied during the lockdowns. Kalaitzaki, Tamiolaki, et al. (2022) have indicated that both adaptive and maladaptive coping strategies were used by the general population and were associated with PTG during the first lockdown in Greece. They suggested that any strategy that helps individuals to adapt to a stressful situation is an effective response to stress at least in the short run. At a later timepoint, the same authors (Kalaitzaki, Tsouvelas, et al., 2022) found that among health care workers, PTG was predicted mostly by adaptive coping strategies such as active coping, instrumental support, positive reframing, and religion. Zoellner and Maercker (2006) suggested that among the adaptive coping strategies, positive reframing plays a key role in PTG. It is not surprising since reframing is based on one's ability to positively reevaluate the meaning of a life crisis, of the self, of the relationships and philosophy of life, all of which constitute PTG features. Examining the role of positive reframing in PTG during two consecutive lockdowns was another aim of this study.

Drawing from the transactional theory of stress (Lazarus & Folkman, 1984) in this study stress was conceptualized as an ongoing bidirectional and transactional process between contextual demands and a person's psychological resources to cope with them. Emotion-based coping, such as positive reframing, could be the result of one's appraisal of an uncontrollable situation (Lazarus & Folkman, 1984), such as the lockdown. Assuming that during the recruitment periods people were perceiving lockdowns as a continued stressor, we suggested that the common, though reasonable, association between the stressor (i.e., lockdown), the coping strategies, and the outcome (i.e., PTG) might be insufficient to explain the dynamic, bidirectional, and ongoing process. We rather assumed that certain coping strategies may be the response of the appraisal of the first lockdown, and stress (general or specifically related to COVID-19) continued to affect people and potentially mediated the relationship between coping strategies and outcome (PTG). Therefore, an alternative model, suggesting that stress responses (either emanating from general stress sources or particularly from lockdown) would mediate the coping—PTG relationship, was examined in the present study.

Social support refers to the self-perceived care and support people receive from family, friends, and the community and it has been considered as a key environmental resource for PTG (Brooks et al., 2019). Although the pandemic research has repeatedly shown the negative association of social support with distress (McLean et al., 2022; Ortiz-Calvo et al., 2022), less is known about its relationship with PTG (Kalaitzaki, Tsouvelas, et al., 2022; Van der Hallen & Godor, 2022). In this article, social support was examined as an available social/contextual resource and not as a coping strategy (i.e., actively seeking support). Social support has been suggested to have the potential to enhance personal resources and abilities for one to identify benefits through challenging circumstances and it has been positively correlated with PTG (Mo et al., 2022;

Zhou et al., 2020). Interestingly, no study has yet examined the association of social support and its different types (e.g., emotional, instrumental) with PTG during repetitive lockdowns. Like different types of social support (as coping strategies) could be pursued during the pandemic depending on the specific features and needs of each period, it could also be assumed that different types of perceived social support would be necessary to promote PTG across different periods of the pandemic.

Based on the literature, the purpose of this study was threefold: (a) to examine the prevalence rates of PTG during two consecutive lockdowns in the general population of Greece; (b) to examine the potential predictors (PTSS, perceived stress, adaptive coping strategies, and social support) of PTG during the two lockdowns; and (c) to examine the mediating role of the stress indicators (PTSS/perceived stress) in the relationship between positive reframing and PTG. Since PTSS has been closely associated with PTG, levels of PTSS and perceived stress were also compared between the two lockdowns. We hypothesized that (1) increased levels of PTG would be expected during the second lockdown compared to the first one (Tedeschi & Calhoun, 2004; Van der Hallen & Godor, 2022); (2) moderate levels of perceived stress and/or PTSS would predict PTG during both lockdowns (Tomaszek & Muchacka-Cymerman, 2020); (3) adaptive coping strategies such as positive reframing and all types of perceived (available) social support would predict PTG during both lockdowns (Kalaitzaki, Tsouvelas, et al., 2022); (4) stress indicators (PTSS/perceived stress) would mediate the relationship between positive reframing and PTG.

Table 1
Sociodemographic Characteristics of the Two Samples of Participants

Variable	First lockdown (N = 1,009)		Second lockdown (N = 352)	
	N	%	*N*	%
Gender				
Male	244	24.2	61	17.3
Female	765	75.8	291	82.7
Region				
Urban	888	88.0	299	84.9
Rural	121	12.0	53	15.1
Marital status				
Married	396	43.7	106	32.3
Singles	511	56.3	222	67.7
Children				
Yes	420	41.6	101	28.7
No	589	58.4	251	71.3
Education				
Compulsory education	175	17.3	55	15.6
University	579	57.4	239	67.9
Master/doctoral	255	25.3	58	16.5
Habitation status				
Single	160	16.6	50	14.3
Partner/husband	194	20.1	83	23.8
Family	612	63.4	216	61.9

Method

Participants

A total of 1,361 respondents (N = 1,009 in the first lockdown and N = 352 in the second lockdown) were recruited from different regions of Greece. After controlling for missing values and outliers (see the Statistical Analyses section), no cases were excluded. The participants' mean age was 35.37 years (SD = 12.9). Most of them were females (77.6%), singles (53.9%), and had no children (61.7%). The majority of the respondents had an undergraduate degree of education (60.1%), were unemployed, students or housewives (41.5%), and were living with their family (60.8%), in urban areas (87.2%). The detailed sociodemographic characteristics of the sample during the first and second lockdown separately can be seen in Table 1.

Measures

A self-report questionnaire was developed which consisted of demographic questions (e.g., sex, age, education, marital status; see Table 1), and instruments about COVID-19-related PTG and its potential predictors. Validated versions of the questionnaires in Greek were used. The Cronbach's αs, the means and standard deviations of all measures are presented in Table 2.

The Posttraumatic Growth Inventory (PTGI; Kalaitzaki, Tamiolaki, et al., 2022; Tedeschi & Calhoun, 1996), consisting of 21 items, measured potential growth in five domains: relating to others (i.e., the experience of feeling a greater sense of closeness with others), new possibilities (i.e., developing new interests in life), personal strength (i.e., a greater sense of self-reliance), spiritual change (i.e., deepened understanding of spiritual matters or strengthening of religious faith), and appreciation of life (i.e., change of priorities about what is important in life). Items were scored on a 6-point scale, ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very large extent*). Participants were instructed to respond regarding the change that occurred following the COVID-19 lockdown. Example items are "I developed new interests" and "I can better appreciate everyday". A total score and five subscale scores were produced, with higher scores indicating higher levels of growth. The original PTGI has good internal consistency (α = 0.90) and acceptable test–retest reliability (r = 0.71) and validity (Shakespeare-Finch et al., 2013; Tedeschi & Calhoun, 1996). The confirmatory factor analysis that assessed dimensionality and the construct validity of PTGI had acceptable goodness of fit indices (Chi-Square [CMIN] = 144,29, df = 62, p < .001, χ^2/df = 2.33, comparative fft index [CFI] = 1.00, Tucker–Lewis index [TLI] = 0.99, incremental fit index = 1.00, root-mean-square error of approximation [RMSEA]; = 0.03, standardized root-mean-square residual [SRMR] = 0.01). Cronbach's α and ω coefficients for the total score were 0.95 each.

The Posttraumatic Stress Disorder Checklist for *DSM-5* (PCL-5; Kalaitzaki, Tsouvelas, et al., 2022; Weathers et al., 2013), consisting of 20 items, measured the intensity of PTSS experienced in the last month due to the lockdown. Items were rated on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). Example items are as follows: "Suddenly feeling or acting as if the stressful experience were actually happening again?" and "Feeling very upset when something reminded you of the stressful experience?" A total score was obtained by summing the 20 items and higher scores indicated a higher level of PTSS. Subscale scores (intrusion, avoidance, negative affect, anhedonia, externalizing behaviors, anxious

Table 2
Differences in the Total and Subscales' Scores of PTGI, PCL-5, and PSS-10 Between the First and Second Lockdown

Variable	Frist lockdown			Second lockdown				
	Cronbach's α	*M*	*SD*	Cronbach's α	*M*	*SD*	*t*	*d*
PTGI	0.96	46.74	25.67	0.95	47.73	24.63	−0.63	0.04
Relating to others	0.90	15.06	9.28	0.88	15.86	9.09	−1.41	0.09
New possibilities	0.85	10.67	6.62	0.85	10.29	6.57	0.93	0.06
Personal strength	0.88	9.51	5.76	0.82	9.92	5.4	−1.20	0.07
Spiritual change	0.7	3.43	2.97	0.64	3.55	3.01	−0.67	0.04
Appreciation of life	0.82	8.07	4.18	0.81	8.11	4.27	−0.15	0.01
PCL-5 (PTSS)	0.93	23.54	15.74	0.93	27.6	16.6	−4.11***	0.25
Intrusion	0.90	1.08	0.98	0.91	1.23	1.05	−2.41*	0.15
Avoidance	0.87	1.57	1.19	0.83	1.57	1.16	0	0.15
Negative affect	0.78	1.01	0.91	0.79	1.17	0.97	−2.72**	0.17
Anhedonia	0.77	1.36	1.06	0.81	1.82	1.16	−6.48***	0.41
Externalizing behaviors	0.47	0.93	0.86	0.45	1.09	0.91	−3.02**	0.18
Anxious arousal	0.74	1.14	1.05	0.72	1.37	1.09	−3.57***	0.21
Dysphoric arousal	0.69	1.38	1.17	0.65	1.63	1.17	−3.47***	0.21
PSS-10 (perceived stress)	0.83	18.8	6.76	0.83	21.32	6.56	−6.05***	0.38

Note. PTGI = Posttraumatic Growth Inventory; PCL-5 = Posttraumatic Stress Disorder Checklist for *DSM-5* (measuring posttraumatic stress symptoms—PTSS); PTSS = posttraumatic stress symptoms; PSS-10 = Perceived Stress Scale. Score ranges for PTGI = 0–105; relating to others = 0–35; new possibilities = 0–25; personal strength = 0–20; spiritual change = 0–10; appreciation of life = 0–15; PCL-5 = 0–80; intrusion, avoidance, negative affect, anhedonia, externalizing behaviors, anxious arousal, dysphoric arousal = 0–4; PSS-10 (perceived stress) = 0–40.
* $p < .05$. ** $p < .01$. *** $p < .001$.

arousal, dysphoric arousal) were also obtained, as suggested by Li et al. (2020). PCL-5 has shown good psychometric properties (interrater reliability 0.92–0.99; internal consistency 0.73–0.85; convergent validity and overall diagnostic efficiency 0.86) in diagnosing PTSD according to the Structured Clinical Interview for *DSM-IV* (Weathers et al., 2001). In this study, Cronbach's α and ω coefficients for the total score were 0.93 each. The Perceived Stress Scale (PSS-10; Andreou et al., 2011; Cohen et al., 1983), consisting of 10 items, measured feelings and thoughts during the last month; participants were not specifically instructed to respond in terms of the lockdown. Items were rated on a 5-point scale ranging from 0 (*never*) to 4 (*very often*). Examples items are as follows: "In the last month, how often have you felt nervous and stressed?" and "In the last month, how often have you been able to control irritations in your life?" A total score, ranging from 0 to 40, was produced by summing all the items. PSS-10 has shown good reliability (0.82) and convergent validity with the Depression, Anxiety and Stress Scale-21 subscales (stress 0.64, depression 0.61, and anxiety 0.54; Andreou et al., 2011). In this study, Cronbach's α and ω coefficients for the total score were 0.84 each.

The Brief Coping Orientation to Problems Experienced Inventory (COPE; Carver, 1997; Kapsou et al., 2010), consisting of 28 items, allocated in 14 subscales, assessed coping strategies during the lockdown. The participants indicated how often they were using each strategy to deal with COVID-19 lockdown, using a 4-point scale ranging from 0 (*not at all*) to 4 (*very much*). Example items are as follows: "I've been taking action to try to make the situation better" (active coping); "I've been getting comfort and understanding from someone" (use of emotional support). Fourteen subscale scores were produced with higher scores indicating a higher frequency of use. With the exception of a couple of scales, COPE has shown good validity and reliability (Carver et al., 1989). In this study, Cronbach's α coefficient for the total scale was 0.82 and ω coefficient was 0.80.

The ENRICHD Social Support Instrument (ESSI; Mitchell et al., 2003), consisting of seven items, assessed both emotional and instrumental perceived support (i.e., help with daily chores) during the lockdown. The participants indicated how often they were using social support during the COVID-19 lockdown. Responses ranged from 1 (*none of the time*) to 5 (*all of the time*). Example items are as follows: "Is there someone you can count on to listen to you when you need to talk?" and "Are you currently married or living with a partner?" Subscale scores were produced, with higher scores indicating greater social support. ESSI has shown good psychometric properties as measured with the intraclass correlation coefficient (0.94) and Cronbach's α (0.88) (Vaglio et al., 2004). It was translated into Greek for the purpose of the present study and Cronbach's α coefficient for the total score was 0.85 and ω coefficient was 0.87.

Study Design and Procedure

This study employed a cross-sectional survey design. Data were collected at two timepoints: during the first COVID-19 lockdown in Greece (April 5–30, 2020) and during the second one (November 15, 2020–December 12, 2020). A Google Forms Questionnaire was developed on the first page of which the informed consent was presented. Using convenience and snowball sampling, it was administered online through authors' personal contacts, social networking sites, and web pages. Participants were invited to recruit their own contacts and post the questionnaire on their own social networking sites. The study was in accordance with the 1964 Helsinki Declaration and its later amendments. Approval of the study was obtained from the ethics committee of the Hellenic Mediterranean University.

Statistical Analyses

Anomaly detection models were used to identify outliers, or unusual cases. Cases with anomaly index values greater than 2

were considered anomaly candidates (International Business Machines Corporation, 2021). Both Cronbach's α and MacDonald's ω values were used to measure internal consistency. A confirmatory factor analysis was conducted in the PTGI that measures the study's outcome variable. Independent samples *t* test was used to explore statistically significant differences between the first and second lockdown on PTG, PTSS, and perceived stress. Pearson *r* estimated the correlation between age, PTG, and its subscales during the first and second lockdown. A cutoff score equal to or above 46 was used to determine moderate to very high PTG levels (Mazor et al., 2016). Two multiple regression analyses (stepwise method) were performed to investigate whether PTSS, perceived stress, social support, and coping strategies were associated with PTG during the two lockdowns. Multicollinearity was examined with tolerance and variance inflation factor (VIF), and both homogeneity of variance and linearity were examined with scatterplots of standardized predicted values. All analyses with $p < 0.05$ were considered significant and were performed with IBM SPSS v23.

Following the regression findings, two structural equation models were conducted with AMOS v20, using the maximum-likelihood estimation method to test the mediating effects of the stress indicators (PTSS/perceived stress) in the relationship between positive reframing and PTG, between the two lockdowns. Parametric bootstrapping of standard errors across 2,000 samples was used for the estimation of indirect effects. Model fit indices were assessed (Hooper et al., 2008; Hu & Bentler, 1999): the value χ^2/degrees of freedom ratio below 3 (Kline, 2005), the SRMR less than 0.08, the TLI, the comparative fit index above 0.90, and finally, the RMSEA less than 0.06 (Hu & Bentler, 1999).

Results

Differences Between the Two Lockdowns

Applying the 46-cutoff score, slightly more than half of the participants displayed PTG during both lockdowns, with a trend of higher rates in the second lockdown, but the difference was not statistically significant between the two lockdowns, 52.7% versus 55.1%; $\chi^2(1) = 0.60$, $p = .439$. PTG levels were moderate. There were neither statistically significant differences in the overall PTG score (46.74 vs. 47.73) nor its subscales between the two lockdowns (Table 2). The appreciation of life subscale was the only one in which participants scored higher (8.07 and 8.11 first and second lockdown, respectively) than the mean of the scale ($M = 7.5$). Statistically significant higher scores on perceived stress, PTSS, and its subscales (except avoidance) were found during the second lockdown compared to the first one (see Table 2).

Correlations Between PTG and PTSS, Perceived Stress, Social Support, and Coping Strategies

During both lockdowns, PTG significantly correlated with social support and most of the coping strategies. However, all significant correlations were weak (from .08 to .35; see Table 3).

Predictors of PTG

All tolerances were close to or higher than 1.0 and all VIF ranged from 1.01 to 1.48 for the first and second lockdown measurements, suggesting that collinearity was not a concern. The data met the assumption of independent errors (Durbin–Watson value was 0.59 and 0.58 for the first and second lockdown, respectively). Scatterplots of standardized predicted values showed that the data met the assumptions of homogeneity of variance and linearity. During the first lockdown, PTG total score was predicted successively by religion coping strategy, positive reframing, use of emotional support coping, self-blame (inversely), denial, perceived emotional support, PTSS, and substance abuse coping strategy (inversely). During the second lockdown, PTG's total score was predicted successively by positive reframing, use of instrumental support coping, religion, perceived instrumental support, perceived stress, and active coping. In Table 4, the variables that predicted PTG during the two lockdowns can be seen.

Mediation Analyses

Based on the regression findings of the predictors of PTG (see Table 4), two mediation analyses were carried out, one for each lockdown. Positive reframing was the shared coping strategy between the two lockdowns, and therefore, it was considered the independent variable in both mediation models. Stress predictors uniquely predicted PTG in the first and second lockdown. Therefore, in the relationship between positive reframing and PTG, PTSS was entered as a mediator in the first model, and perceived stress was entered as a mediator in the second model. Both mediation models demonstrated acceptable model fit: first model (for the first lockdown): CMIN = 189.348, $df = 63$, $p < .001$, CMIN/$df = 3.01$, CFI = .98, TLI = .98, RMSEA = .05 (lower boundary of 90% confidence interval [LO] = .04, higher boundary of 90% confidence interval [HI] = .05), SRMR = .05; second model (the second lockdown): CMIN = 223.558, $df = 108$, $p < .001$, CFI = .96, TLI = .95, RMSEA = .06 (LO = .05, HI = .07), SRMR = .06. PTSS and perceived stress partially mediated the positive reframing—PTG relationship in the first and second models, respectively. The two models with the standardized path coefficients are depicted in Figures 1a and 1b.

Discussion

This study examined (a) the prevalence rates and the predictors of perceived PTG among the general population during two consecutive COVID-19 lockdowns in Greece and (b) the mediating role of stress indicators in the relationship between positive reframing and PTG. The findings of this study revealed moderate levels of PTG among Greeks during both lockdowns, with the mean of the appreciation of life subscale exceeding that of the others. In agreement with prior research regarding PTG in response to COVID-19 (Asmundson et al., 2021; Kalaitzaki, Tamiolaki, et al., 2022; Koliouli & Canellopoulos, 2021; Yu et al., 2022), it can be assumed that people acknowledged the volatility of life, changed priorities and began to pay attention to small things in life that previously were considered unimportant.

PTG levels, however, did not significantly increase during the second lockdown (although a trend of higher scores was observed). Since found relatively stable levels of PTG over five timepoint measurements during an 8-month period, higher levels of PTG could have been expected and are likely to occur at a later timepoint. Besides, given that PTG has been shown to develop in the aftermath of a traumatic event (Tedeschi & Calhoun, 2004), it was reasonable to find no further significant PTG increase since the pandemic

Table 3

Correlations Between PTGI, PCL-5, PSS-10, Social Support (ESSI-Emotional and Instrumental), and Coping Strategies (COPE) in the First and Second Lockdown Measurements

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. PTGI	—	.12**	.06	.18**	.09**	.12**	.22**	.13**	−.08*	.23**	.23**	−.05	.19**	.32**	.18**	.04	.12**	.35**	.00
2. PCL-5	.07	—	.70**	−.24**	−.17**	−.17**	−.02	.41**	.24**	.20**	.22**	.54**	.31**	−.12**	.05	.09**	−.17**	.07*	.38**
3. PSS-10	.07	.70**	—	−.23**	−.12**	−.22**	−.09**	.34**	.18**	.14**	.13**	.43**	.23**	−.22**	−.06	.03	−.22**	−.05	.22**
4. ESSI (perceived emotional support)	.20**	−.22**	−.13*	—	.57**	.16**	.20**	−.11**	−.10**	.31**	.24**	−.26**	.15**	.25**	.13**	.08**	.16**	.12**	.00
5. ESSI (perceived instrumental support)	.15**	−.08	−.06	.45**	—	.09**	.09**	−.06*	−.10**	.15**	.07*	−.15**	.06	.10**	.02	.03	.09**	.05	−.09**
6. COPE (self-distraction)	.11*	−.11*	−.13*	.07	.01	—	.25**	−.13**	−.05	.08*	.00	−.17**	.05	.38**	.30**	.16**	1.00**	.10**	−.06
7. COPE (active coping)	.30**	−.08	−.09	.07	.04	.20**	—	.01	−.08**	.30**	.29**	−.22**	.24**	.46**	.54**	.13**	.25**	.24**	.14**
8. COPE (denial)	.10	.39**	.32**	−.02	.01	−.14*	.06	—	.15**	.18**	.18**	.43**	.28**	−.04	.06*	.08*	−.13**	.10**	.28**
9. COPE (substance use)	.00	.27**	.21**	−.12*	.01	−.09	−.09	.06	—	.02	.00	.24**	.09**	−.07*	−.05	.14**	−.05	−.13**	.12**
10. COPE (emotional support)	.15**	.11*	.17**	.31**	.16**	.02	.21**	.13*	.12*	—	.76**	.08**	.46**	.20**	.30**	.13**	.08*	.19**	.27**
11. COPE (instrumental support)	.21**	.15**	.21**	.24**	.05	.03	.15**	.09	.10	.73**	—	.11**	.48**	.17**	.33**	.12**	.00	.22**	.34**
12. COPE (behavioral disengagement)	−.11*	.50**	.47**	−.15**	−.04	−.13*	−.30**	.42**	.20**	.03	.05	—	.16**	−.21**	−.09**	.10**	−.17**	−.06*	.37**
13. COPE (venting)	.17**	.13*	.18**	.15**	−.04	.08	.24**	.21**	.03	.38**	.37**	−.05	—	.19**	.33**	.22**	.05	.19**	.31**
14. COPE (positive reframing)	.32**	−.27**	−.32**	.15**	.02	.28**	.46**	−.11*	−.19**	.03	.03	−.38**	.09	—	.45**	.23**	.38**	.29**	.07*
15. COPE (planning)	.29**	.00	−.04	.06	.03	.22**	.54**	.00	−.11*	.23**	.26**	−.20**	.21**	.39**	—	.19**	.30**	.23**	.30**
16. COPE (humor)	.07	.09	.07	.00	.12*	.05	.07	.06	.19**	.09	.01	.11*	.14**	.17**	.07	—	.16**	.05	.17**
17. COPE (acceptance)	.11*	−.11*	−.13*	.07	.01	.99**	.20**	−.14*	−.09	.02	.03	−.13*	.08	.28**	.22**	.05	—	.10**	−.06
18. COPE (religion)	.27**	.12*	.03	.01	−.11*	.03	.18**	.16**	−.05	.07	.16**	−.01	.18**	.30**	.27**	.04	.03	—	.07*

Note. Coefficients below the diagonal are correlations between variables for the first timepoint (lockdown) and coefficients above the diagonal are correlations between variables for the second timepoint (lockdown). PTGI = Posttraumatic Growth Inventory; PCL-5 = Posttraumatic Stress Disorder Checklist for *DSM-5* (measuring posttraumatic stress symptoms—PTSS); PSS-10 = Perceived Stress Scale (measuring perceived stress symptoms); ESSI = ENRICHED Social Support Instrument; COPE = Coping Orientation to Problems Experienced Inventory; PTSS = posttraumatic stress symptoms.

* $p < .05$. ** $p < .01$.

Table 4

Multiple Regression Analyses (Stepwise Method) for Predicting PTG by PTSS (PCL-5), PSS-10, Social Support (ESSI), and Coping Strategies During the First and Second Lockdown

	First lockdown		Second lockdown	
Variable	Step (ΔR^2)	Final β	Step (ΔR^2)	Final β
PCL-5 (posttraumatic stress symptoms)	7 (0.007)	0.16***		
PSS-10 (perceived stress symptoms)			5 (0.020)	0.15**
ESSI (perceived emotional support)	6 (0.006)	0.10**		
ESSI (perceived instrumental support)			4 (0.024)	0.16***
COPE (self-distraction)				
COPE (active coping)			6 (0.017)	0.15***
COPE (denial)	5 (0.009)	0.09**		
COPE (substance use)	8 (0.004)	−0.06*		
COPE (use emotional support)	3 (0.018)	0.10**		
COPE (use instrumental support)			2 (0.040)	0.11*
COPE (behavioral disengagement)				
COPE (venting)				
COPE (positive reframing)	2 (0.051)	0.23***	1 (0.105)	0.25***
COPE (planning)				
COPE (humor)				
COPE (acceptance)				
COPE (religion)	1 (0.125)	0.24***	3 (0.024)	0.16***
COPE (self-blame)	4 (0.011)	−0.13***		
R^2	0.23		0.22	

Note. PTG = posttraumatic growth; PCL-5 = Posttraumatic Stress Disorder Checklist for *DSM-5* (measuring posttraumatic stress symptoms—PTSS); PTSS = posttraumatic stress symptoms; PSS-10 = Perceived Stress Scale (measuring perceived stress symptoms); ESSI = ENRICHED Social Support Instrument; COPE = Coping Orientation to Problems Experienced Inventory; emotion-focused coping strategies included acceptance, use of emotional support, humor, positive reframing, and religion; problem-focused coping strategies included active coping, use of instrumental support, planning; dysfunctional coping strategies included behavioral disengagement, denial, self-distraction, self-blame, substance use, and venting. ΔR^2 is the incremental increase in the model R^2 resulting from one step to another.
* $p < .05$. ** $p < .01$. *** $p < .001$.

continued to surge during the second lockdown (and potentially was still perceived as traumatic).

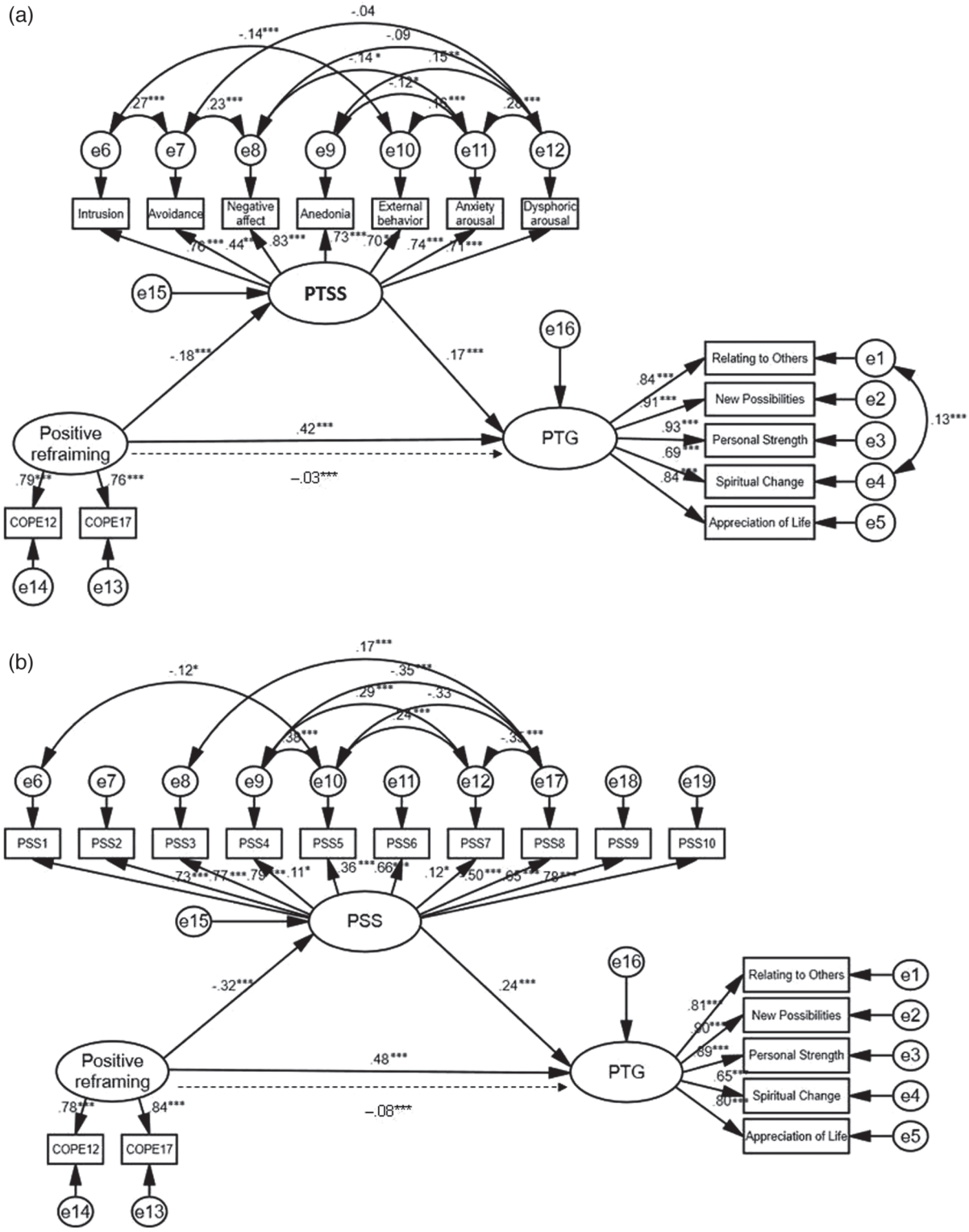
In line with previous findings (Kalaitzaki, Tamiolaki, et al., 2022; Kalaitzaki, Tsouvelas, et al., 2022; Tomaszek & Muchacka-Cymerman, 2020), stress indicators (perceived stress and PTSS) were predictors of PTG. It has been shown that stress levels must be challenging enough to promote PTG, but not extremely high to inhibit growth (Eisma et al., 2019; Tomaszek & Muchacka-Cymerman, 2020). Though significantly increased during the second lockdown, the levels of stress indicators were relatively moderate (PSS scores above 27 and PCL-5 scores above 44 are considered high; Cohen et al., 1983; Weathers et al., 2013). It could be assumed that stress levels should have been somehow higher to produce further PTG.

Stress indicators (perceived stress and PTSS) distinctively predicted PTG; PTSS was associated with PTG during the first lockdown and perceived stress was associated with PTG during the second one. Furthermore, stress indicators exerted a facilitating role on PTG, since PTSS/perceived stress distinctively mediated the positive reframing—PTG relationship (the PTSS during the first lockdown, whereas the perceived stress during the second lockdown). The PCL-5 (measuring PTSS) was responded specifically about the traumatic experience of the lockdown and measured the PTSS that people could likely have in response to lockdown. PSS-10 (measuring perceived stress) was responded about the general stress experienced, emanating from one's inability to handle the demands of uncontrollable events/hardships in general (e.g., No. 2: unable to control things; No. 6: could not cope with things; No. 9: things outside of control; No. 10: could not overcome difficulties). During the second lockdown, participants could have been potentially preoccupied with additional or different stress sources, such as financial hardships and so forth. That being said, it might be that pandemic-related stress activated the growth process and general stress maintained this process. Kalaitzaki, Tsouvelas, et al. (2022) have further suggested that during the second lockdown people in Greece continued to perceive it as an unpredictable and uncontrollable situation that inflicted significant stress.

A number of coping strategies were predictors of PTG. During the first lockdown, both adaptive (positive reframing, religious coping, and use of emotional support) and maladaptive coping strategies (self-blame, denial, and substance use) were associated with PTG, which is in line with other studies (Kalaitzaki, Tsouvelas, et al., 2022; Kalaitzaki & Rovithis, 2021; Kirby et al., 2011). These authors have suggested that during an acute, unexpected, and uncontrollable event, any coping strategy that potentially offers temporary relief from stress is likely to be used; often maladaptive coping can be a quick and easy way and thus, successful in the short term. During the second lockdown, only adaptive coping strategies (positive reframing, religious coping, active coping, and use of instrumental support) were associated with PTG. Similar findings have been reported for health care workers (Kalaitzaki, Tsouvelas, et al., 2022); during the second lockdown, PTG was

Figure 1

Mediating Effects of the (a) PTSS During the First Lockdown and (b) Perceived Stress During the Second Lockdown in the Relationship Between Positive Reframing and PTG



Note. PTSS = posttraumatic stress symptoms; COPE = Coping Orientation to Problems Experienced Inventory; PTG = posttraumatic growth; PSS = Perceived Stress Scale. The standardized path coefficients are presented. Dotted lines refer to indirect effects.
* $p < .05$. ** $p < .01$. *** $p < .001$.

predicted predominantly by adaptive coping strategies (i.e., positive reframing, religion, active coping, instrumental support, and denial). Although it would have been reasonable to assume that people were probably more adjusted to the "lockdown experience" ("knew what to expect and how to respond"), we cannot know with certainty. What data say is that adaptive coping strategies were associated with PTG during the second lockdown. Neither we know whether the continued use of a mixture of adaptive and maladaptive coping strategies during the second lockdown would have likely further promoted PTG or inhibited its process. It is reasonable though to assume that the use of adaptive coping strategies might have warranted higher levels of PTG, whereas there might have been a cost of using maladaptive coping strategies in the long run.

It has been suggested that PTG consists of two aspects: The constructive, or real, functional and self-transcending, which is how Tedeschi and Calhoun have conceptualized PTG, and the illusory or self-deceptive and dysfunctional (Asmundson et al., 2021; Maercker & Zoellner, 2004); the latter refers to distorted positive illusions that people form to assuage distress (Maercker & Zoellner, 2004) or attempts of self-deception that "everything is fine" notwithstanding the reality. Based on this distinction and the differential association of the adaptive and maladaptive coping strategies with real and illusory PTG, respectively (Asmundson et al., 2021; Asmundson & Taylor, 2020; Maercker & Zoellner, 2004; Pat-Horenczyk et al., 2015; Zoellner & Maercker, 2006), in this study, the association of solely adaptive coping with PTG during the second lockdown could be considered as an indication of real PTG. Relinquishing avoidance-type coping (e.g., denial) during the second lockdown, as was the case in this study, may also indicate real PTG (Asmundson et al., 2021). The use of active coping and instrumental support during the second lockdown indicates that PTG has moved beyond growth cognitions into growth action (Hobfoll et al., 2007) and strengthens the assertion that PTG may be real/constructive. Stronger support for the assertion that PTG could be real also comes from the finding that social support was associated with PTG during both lockdowns. The suggestion that social support is a significant environmental resource for real/constructive PTG (Saltzman et al., 2018; Schaefer & Moos, 1998; Tedeschi & Calhoun, 2004) points in the same direction. The association of PTG with the stress indicators also corroborates this assumption, whereas the deterioration of stress levels through time may sustain the opposite argument (Asmundson et al., 2021; Asmundson & Taylor, 2020). Should PTG changes progressively in terms of quality (illusory/real) rather than quantity, thus may indicate its constructive aspect. The slightly (though not significant) increased PTG levels during the second lockdown is another argument supporting this assumption, in line with the suggestion that real PTG increases over time, whereas illusory PTG decreases over time (Zoellner & Maercker, 2006). However, since we have neither assessed PTG prior to the pandemic to capture the degree of actual change nor have we assessed other posttrauma indicators of various aspects of PTG, we could not know whether PTG is actual (constructive and self-transcending) or self-perceived or deceptive (and potentially illusory; Frazier et al., 2009; Johnson & Boals, 2015; Maercker & Zoellner, 2004). The unprecedented and abrupt changes that the pandemic and lockdowns induced can undoubtedly be considered events high in event centrality for most people (Johnson & Boals, 2015), thus making it more likely that people rightfully report on actual PTG (rather than self-perceived illusory PTG). However, these are only assumptions, and longitudinal studies are required to elucidate the different aspects of PTG over time.

Perceived social support, emotional during the first lockdown and instrumental during the second one, predicted PTG during the two lockdowns. Studies have shown that emotional support is expected to be crucial at an early crisis stage, when individuals unexpectedly face a stressor and need to urgently cope, whereas instrumental support may be useful at a later stage, when individuals are overwhelmed by the severe demands of the stressor and potentially have to deal with various deficits (Schwarzer et al., 2006). The diversified use of social support might be relevant to the diversified contribution of the stress indicators to PTG during the two lockdowns: During the first lockdown specific pandemic-related stress symptoms (PTSS) promoted PTG, potentially because people were emotionally overwhelmed and consequently sought available emotional support, whereas during the second lockdown general perceived stress predicted PTG, potentially because people were suffering practical issues, such as hardships and losses, and consequently sought available instrumental support.

Positive reframing and religious coping were the shared predictors between the two lockdowns; this is in line with other findings (Jordan et al., 2020; Prati & Pietrantoni, 2009; Willey et al., 2022). Positive reframing is a mechanism through which individuals modify maladaptive beliefs and cognitive distortions that develop after a stressful event and helps them ascribe a constructive meaning to adversity (Jordan et al., 2020). Through positive reframing, stressful events can be seen as opportunities to learn about themselves, strengthen their relationships and achieve a new sense of meaning in their life (Yeung et al., 2016).

Positive reframing was also associated with decrease of stress indicators (i.e., PTSS/perceived stress) in both mediation models, and increase of PTG, directly and indirectly through stress indicators. In other words, stress was decreased by the effect of positive reframing, and it increased PTG. Therefore, PTG was the outcome of the effect of positive reframing and the mediating role of PTSS/perceived stress during the first and second lockdown, respectively.

Interestingly, although religious coping is more often used by older people (Carneiro et al., 2021), our sample of younger participants made use of it during both lockdowns. It might be that the lockdowns and the pandemic were perceived as uncontrollable and overwhelming events that exceeded people's abilities to cope with rationally; a spiritual or transcendental dimension was needed to deal with these challenges. Religious coping seems to establish spiritual connections, support for people, and relief from suffering during stressful events, particularly during isolation; it should not then be ignored but rather be addressed by professionals and taken into consideration by governments in establishing the restrictions (Lucchetti et al., 2021).

The findings should be interpreted by taking into account the study's limitations. An important one was the unequal numbers of the study participants between the two lockdowns and the overwhelmingly greater number of women over men. Although approximately the same number of potential participants were invited through the same or similar sites, networks, and webpages, significantly fewer participants were recruited during the second lockdown. The proliferation of similar surveys during the pandemic may have overburdened people and deterred them from participating in this study, particularly as a proportion of them have been presented

with the same questionnaire twice within a few months later. It is also well known that gender differences are reported particularly in mail or web surveys with women being more likely to respond to and respond more promptly after the invitation than men (Becker, 2022). The online format of the questionnaires and the biases associated with the use of self-report questionnaires (e.g., social desirability) should also be mentioned. Even though the two cross-sectional surveys during the consecutive lockdowns on convenience samples with similar characteristics resemble a longitudinal survey, causal statements are disqualified. We cannot also know whether the two samples differed in other respects except the timing of the lockdown. Examining how different sources of social support (e.g., from family and friends) relate to PTG could have provided further insights. Longitudinal studies of many timepoint measurements through a considerable period (before, during, and after consecutive lockdowns) would have provided a better understanding of the PTG process and its contributing factors.

Despite the limitations, this study showed that during the second lockdown Greek participants had achieved PTG at moderate levels, and a number of internal/personal resources (i.e., various coping strategies), self-perceived stress, and external/contextual factors (i.e., social support) contribute to this process. These findings expand the body of knowledge on PTG and provide insights into the determinants of PTG. The study also provided the first piece of empirical evidence on the distinctive contribution of stress indicators and types of social support in PTG; these findings offer indications for optimal timing for possible interventions and enable the development of tailor-based interventions depending on the time/stage of the pandemic. The important role of the specific stress indicators, coping strategies, and types of social support in PTG call to refocus interventions to provide best practice guidelines regarding how individuals can change due to challenging circumstances across time; interventions should provide recommendations to keep stress indicators at moderate levels, learn coping strategies that promote PTG and strengthen and/or widen social support systems. In sum, knowing more about the processes and the determinants of growth can help policymakers develop appropriate interventions and strategies and mental health services to deliver strength-based, recovery-oriented care.

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