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Affective Experiences During COVID-19 Pandemic Lockdown and Posttraumatic Growth: A 1-Year Longitudinal Study in France

N. Goutaudier¹, N. Martinelli², J. Chevalère², G. Dezechache², C. Belletier², P. Huguet², S. Droit-Volet²
& S. Gil¹

¹ Université de Poitiers; CNRS (CeRCA UMR7295), FRANCE

² Université Clermont Auvergne; CNRS, LAPSCO, F-63000 CLERMONT-FERRAND, FRANCE

*Correspondence concerning this article should be addressed to:

Nelly Goutaudier
Centre de Recherches sur la Cognition et l'Apprentissage (CeRCA), Bât. A5, MSHS, 5 rue
Théodore Lefebvre, TSA 21103, 86073 Poitiers Cedex 9, France
Tel.: +33 5 49 45 32 44
Fax: +33 5 49 45 46 16
E-mail: nelly.goutaudier@univ-poitiers.fr

Introduction

The pandemic of SARS-CoV-2, the virus responsible for COVID-19, has required unprecedented public-health measures resulting in major adjustments to people's everyday lives, and thus in a considerable psychological impact on individuals (Brooks et al., 2020). Worldwide, it is now acknowledged that the first period of lockdown was associated with psychological distress. In the general population, several psychological impairments were reported such as Substance Use Disorders (Mallet et al., 2021), Burnout syndrome, or Eating Disorders (see Clemente-Suarez et al., 2021 for a review). To date, anxiety and depressive symptoms (see Salari et al., 2020 for a meta-analysis) have received a special attention. According to a recent systematic review and meta-analysis conducted on a total sample of 78,225 participants, the average prevalences were 38.12% for anxiety, 34.31% for depression and 37.54% for psychological distress (Necho et al., 2021). Researchers (Heeren, 2020) have also highlighted a high prevalence of negative emotional subjective experiences, such as fear and anger (e.g., Moron and Biolik-Moron, 2020), as well as feelings of loneliness and isolation (e.g., Groarke et al., 2020; Kokou-Kpolou et al., 2020). Counterintuitively, some studies have suggested that some individuals experienced positive feelings (Moron and Biolik-Moron, 2020).

More recently, longitudinal studies have examined the dynamic impact of the health crisis, but only over short time periods of up to 5 months after the first lockdown (Asmundson et al., 2021; Yarrington et al., 2021). These studies suggest that this traumatic experience (Shevlin et al., 2020) may have brought about an improvement in individuals' affective state (i.e., resilience; Yarrington et al., 2021) or even positive psychological changes in terms of life perspective (i.e., posttraumatic growth, PTG; Asmundson et al., 2021; Vazquez et al., 2021). Resilience can be seen as bouncing *back* from a traumatic event, whereas PTG is about bouncing *forward*. More specifically, PTG refers to the restructuring of the fundamental

components of the assumptive world, experienced as the result of a struggle with highly challenging life conditions (e.g., Calhoun and Tedeshi, 2014). The pandemic and lockdowns have been challenging for many individuals (e.g. Kokou-Kpolou et al., 2020). This is consistent with the theoretical model according to which PTG can be developed following highly stressful life circumstances (Calhoun and Tedeshi, 2014). Whereas resilience allows individuals to overcome difficult life events and return to normal functioning, PTG extends prior functioning and can lead to a greater appreciation of life, spiritual growth, personal strength, improved relationships, and a renewed sense of possibilities (Calhoun and Tedeshi, 2014). Studies suggest that 39-89% of individuals have developed PTG since the start of the pandemic (e.g., Chen et al., 2021; Stellard et al., 2021). However, most of these studies used cross-sectional designs and assessed PTG immediately after the first wave. According to the theoretical model of PTG (Calhoun and Tedeshi, 2014), changes in core beliefs are a demanding and time-consuming process. Interestingly, two conceptions of PTG have been proposed: *illusory* (i.e., not actual growth, but rather a maladaptive coping strategy) and *real* (i.e., actual change in fundamental assumptions leading to a decrease in distress) (Boerner et al., 2017). These fundamental conceptions of PTG have been studied surprisingly little in the COVID-19 context, given the importance of considering the illusory side of PTG so as not to overestimate the positive consequences of the pandemic (Asmundson et al., 2021).

In France, the authorities imposed the first lockdown on 17 March 2020, with limited opportunities for people to leave their homes for 9 consecutive weeks. Given that several affective states can simultaneously occur following a stressful event, it seemed appropriate to adopt a person-centered approach to fully assess emotional experiences during this lockdown. The aim of the present exploratory longitudinal study was therefore to a) identify, through a person-centered approach, profiles of affective states (i.e., self-reported emotional experience and self-reported anxiety and depressive symptoms) in a large and representative sample of

the general population during the first lockdown in France (T1: March/May, 2020), and b) examine differences between these profiles in terms of short-term psychological responses and long-term positive outcomes (T2: March/May, 2021). Based on current literature, we reckoned that participants who reported negative affective states (negative emotional experience associated with anxiety and depressive symptoms) during the lockdown at T1 would exhibit a high level of PTG at T2.

Methods

Participants and Procedure

A total of 1075 French participants (mean age = 47.54 years, $SD = 15.61$; 671 women) completed an online questionnaire during the first French lockdown (T1: March to May 2020) and 1 year later (T2: March to May 2021) (see Table 1). The only inclusion criterion was being over 18. The study was conducted in accordance with the Declaration of Helsinki and approved by the Research Ethics Committee of the University of Clermont Auvergne (IRB00011540-2020-31).

Measures¹

Depressive symptoms (T1)

We administered the Beck Depression Inventory Short Form (Beck and Beck, 1972), a 13-item self-report questionnaire. Responses are rated on a 4-point scale ranging from 0 to 3. The total score, ranging from 0 to 39, reflects the intensity of depressive symptoms.

Anxiety (T1)

¹ The present study was part of a larger project that included variables which were not analyzed here.

Anxiety was assessed with the 6-item short-form Spielberger State-Trait Anxiety Inventory (Marteau and Bekker, 1992). Responses are rated on a 4-point scale, with a total score ranging from 6 to 24. The higher the score, the greater the anxiety.

Feelings of loneliness (T1)

Feelings of loneliness were assessed with the third version of the UCLA Loneliness Scale Short Form (Russell, 1996), a 10-item self-report questionnaire. Items are rated on a 4-point scale, with a total loneliness score of 10-40.

Affective states (T1).

Affective states during lockdown were assessed with one item per affective state. Three affective states were measured: fear, happiness, and anger. Participants had to rate the degree to which they experienced each of these states on a 7-point scale ranging from 1 to 7.

Posttraumatic growth levels (T2)

We administered the Posttraumatic Growth Inventory, a 21-item self-report questionnaire (Tedeschi and Calhoun, 1996). Participants had to rate the degree to which they experienced a change in their life as a result of the COVID-19 pandemic on a 6-point scale ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). This scale contains 5 subscales: 1) New possibilities, 2) Interpersonal, 3) Personal strength, 4) Spiritual change, and 5) Appreciation of life. The higher the subscore, the higher the level of posttraumatic growth.

Results

Statistical Analysis

A cluster analysis was conducted to identify homogenous groupings of participants based on standardized scores of affective states at T1. As groups were not determined in

advance, we ran a hierarchical cluster analysis and used the dendrogram and the agglomeration schedule to define the appropriate number a cluster to consider. K-means clustering was then used to assign participants to one of the identified clusters. Groups were compared on their mean scores (non-standardized) for each affective state experienced during the first lockdown through a series of one-way analyses of variance and post hoc tests. Groups were then compared on PTG scores at 1-year follow-up.

Descriptive Statistics for Three-Cluster Solution

A three-cluster solution was identified. Discriminant analysis revealed clear distinctions between the clusters (Wilks' Lambda: .194), $F(8, 2138) = 340.771$ $p < .001$, with 95.53% of the participants correctly classified.

The first cluster ($n = 230$, 21.40% of study sample) was characterized by elevated feelings of loneliness and labeled *Loneliness*. The second cluster ($n = 435$, 40.46% of study sample) was characterized by an elevated feeling of happiness and labeled *Happiness*. The third cluster ($n = 410$, 38.14% of study sample) was characterized by moderate levels of anger, fear, and happiness, and labeled *Negative-moderate* (see Fig. 1).

----- Insert Figure 1 here-----

Means Comparisons Between Three Clusters for First Lockdown in France (T1)

Affective states

Participants in the Negative-moderate feelings cluster had significantly higher mean anger, $F(2, 1072) = 442.31$, $p < .001$, and fear, $F(2, 1072) = 271.33$, $p < .001$, scores than participants in the Loneliness and Happiness clusters, who did not differ from each other. Participants in the Happiness cluster had a significantly higher mean happiness score, $F(2, 1072) = 512.05$, $p < .001$, than participants in the Negative-moderate and Loneliness clusters.

Participants in the Loneliness cluster had a significantly higher mean loneliness score, $F(2, 1072) = 405.37, p < .001$, than participants in the Negative-moderate and Happiness clusters. For a more detailed statistical description, see Table 1.

Anxiety and depressive symptoms

Participants in the Loneliness cluster had significantly higher mean scores on anxiety, $F(2, 1071) = 212.13, p < .001$, and depressive symptoms, $F(2, 1070) = 218.16, p < .001$, than participants in the Negative-moderate and Happiness clusters (see Table 1).

-----Insert Table 1 here-----

Means Comparisons According to Levels of Posttraumatic Growth 1 Year After First Lockdown in France (T2)

Regarding the mean PTG subscores (see Table 1), participants in the Negative-moderate cluster had significantly higher mean scores on the interpersonal, $F(2, 1072) = 15.320, p < .001$, new possibilities, $F(2, 1072) = 11.328, p < .001$, and personal strength, $F(2, 1072) = 12.116, p < .001$, subscales, compared with participants in the Loneliness and Happiness clusters, which did not differ from each other. Negative-moderate participants had a significantly higher mean score on the spiritual change subscale, $F(2, 1072) = 8.43, p < .001$, than Happiness participants, and a significantly lower mean score on the appreciation of life subscale, $F(2, 1072) = 18.31, p < .001$, than participants in the Loneliness and Negative-moderate clusters, who did not differ from each other.

Discussion

This longitudinal study was designed to identify different profiles of responses to the first lockdown and establish an association with PTG dimensions 1 year later. Three distinct clusters were highlighted: one positive (Happiness), one negative (Loneliness) and one with

moderately negative affective states. Interestingly, 38.14% of participants developed negative-moderate feelings during the lockdown, suggesting the emotional complexity of coping with this situation.

As expected, participants reporting feelings of loneliness had the highest levels of anxiety and depressive symptoms at T1, in line with the cognitive and behavioral explanatory models of mental disorders (Hofmann, 2011). Contrary to our hypothesis, the highest level of PTG at T2 was found not in the cluster with immediate negative emotional responses (i.e., Loneliness), but in the Negative-moderate feelings cluster. The association between negative states and PTG is consistent with the comprehensive model (Calhoun and Tedeschi, 2014) of PTG that highlights distress as a key component of the development of PTG, but questions the role of happiness.

Noteworthy, our findings showed that PTG levels were relatively low, compared with previous studies (e.g., Chen et al., 2021; Stellard et al., 2021). Given the time needed for PTG (Calhoun and Tedeschi, 2014), we reckon that the high PTG levels found in previous (short-term) studies were actually illusory (Asmundson et al., 2021). The sheer length of the pandemic may prevent individuals from engaging in the process of controlling rumination that can lead to PTG, which would explain this finding.

PTG can lead to a subsequent decrease in psychopathological symptoms such as PTSD (Chen et al., 2015), so it is important to favor it in patients with psychological impairments due to the pandemic. Research in this area has begun, and some efficient therapeutic components aimed at fostering growth could easily be added to traditional therapies (e.g., Calhoun and Tedeschi, 2014; Jones et al., 2020). The integration of PTG into clinical practice for COVID-19-related mental disorders should therefore be considered.

Limitations

Several limitations need to be acknowledged. First, data were obtained through an online survey. Additionally, variables that could play a role in the development of PTG (e.g., rumination) were not assessed. While it might have impacted the experience of lockdowns, personality and temperamental variables were not evaluated, which constitutes an important limitation of this study. Moreover, given the overlapping between measures of loneliness and depressive symptoms, these results need to be considered with caution. Finally, this study did not yield any information on the course of psychological symptoms developed at T1. Although the aim was to explore subsequent PTG, an additional wave of data collection is needed to explore how far real PTG protects individuals from lasting symptoms.

Conclusion

Overall, our findings suggest that individuals who had difficulty coping with the first lockdown experienced subsequent growth 1 year later, albeit to a very moderate extent. While not elevated, the highest level of PTG was found in participants who reported negative-moderate feelings during the first lockdown. This important finding could be used as a psychoeducational component of clinical practice. Previous reports of high PTG levels therefore need to be viewed with caution, as they may reflect the adoption of maladaptive strategies for coping with negative states. Additional longitudinal studies exploring the impact of long-term PTG on psychopathological symptoms are warranted.

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Table 1: Mean comparisons of affective state (non-standardized), anxiety and depressives at T1 and levels of posttraumatic growth at T2 on the 3 clusters (using ANOVAs and post-hoc test) in a sample of 1075 French participants.

| <i>Cluster-based variables (T1)</i> | <i>Mean score</i> | <i>SD</i> | <i>Positive reactions (T2)</i> | <i>Mean score</i> | <i>SD</i> |
|---|-------------------|-----------|---|--------------------|-----------|
| Levels of Happiness $F(2, 1072) = 512.05, p < .001$ | | | Interpersonal $F(2, 1072) = 15.320, p < .001$ | | |
| Loneliness Cluster | 2.40 | 1.02 | Loneliness Cluster | 8.07 ^a | 7.75 |
| Happiness Cluster | 5.11 | 1.04 | Happiness Cluster | 7.03 ^a | 8.59 |
| Negative-moderate feelings Cluster | 4.26 | 1.04 | Negative-moderate feelings Cluster | 10.23 | 8.75 |
| Level of Anger $F(2, 1072) = 442.31, p < .001$ | | | New possibilities $F(2, 1072) = 11.328, p < .001$ | | |
| Loneliness Cluster | 3.66 | 1.86 | Loneliness Cluster | 6.03 ^a | 5.73 |
| Happiness Cluster | 1.93 | 0.99 | Happiness Cluster | 5.59 ^a | 6.40 |
| Negative-moderate feelings Cluster | 4.61 | 1.26 | Negative-moderate feelings Cluster | 7.57 | 6.31 |
| Level of Fear $F(2, 1072) = 271.33, p < .001$ | | | Personal strength $F(2, 1072) = 12.116, p < .001$ | | |
| Loneliness Cluster | 3.40 | 1.70 | Loneliness Cluster | 5.44 ^a | 4.90 |
| Happiness Cluster | 2.11 | 1.04 | Happiness Cluster | 4.92 ^a | 5.45 |
| Negative-moderate feelings Cluster | 4.22 | 1.35 | Negative-moderate feelings Cluster | 6.69 | 5.37 |
| Level of Isolation $F(2, 1072) = 405.37, p < .001$ | | | Spiritual changes $F(2, 1072) = 8.43, p = .00023$ | | |
| Loneliness Cluster | 27.35 | 4.14 | Loneliness Cluster | 1.54 ^{ab} | 2.22 |
| Happiness Cluster | 18.13 | 4.15 | Happiness Cluster | 1.29 ^a | 2.34 |
| Negative-moderate feelings Cluster | 21.62 | 3.68 | Negative-moderate feelings Cluster | 1.97 ^b | 2.59 |
| <i>Psychopathological variables (T1)</i> | | | | | |
| Levels of depressive symptoms $F(2, 1072) = 218.16, p < .001$ | | | Life appreciation $F(2, 1072) = 18.31, p < .001$ | | |
| Loneliness Cluster | 10.41 | 6.19 | Loneliness Cluster | 5.36 ^a | 3.83 |
| Happiness Cluster | 2.49 | 2.98 | Happiness Cluster | 4.32 | 3.96 |
| Negative-moderate feelings Cluster | 6.04 | 5.17 | Negative-moderate feelings Cluster | 5.94 ^a | 3.93 |
| Levels of anxiety symptoms $F(2, 1072) = 212.13, p < .001$ | | | | | |
| Loneliness Cluster | 15.73 | 4.60 | | | |
| Happiness Cluster | 10.00 | 3.13 | | | |
| Negative-moderate feelings Cluster | 14.32 | 4.09 | | | |

Note. Mean with same superscript are not significantly different from each other (*Tukey* post-hoc comparisons). Levels of happiness, anger, and fear were assessed using a single item. Levels of isolation were assessed using the Loneliness Scale Short Form; levels of anxiety symptoms were assessed using the Spielberger State-Trait Anxiety Inventory (STAI), levels of depressive symptoms were assessed using the Depression Inventory Short Form (BDI-SF), levels of PTG were assessed using the Posttraumatic Growth Inventory (PTGI). T1 = First Lockdown in France; T2 = One year later.

Figure 1:

Cluster solution based on standardized scores of feelings and emotions (anger, happiness, fear and isolation) experienced during the first lockdown in France in a sample of 1075 French participants

