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Real versus illusory personal growth in response to COVID-19 pandemic stressors

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ABSTRACT

Background: There is considerable evidence of widespread emotional distress associated with the COVID-19 pandemic. A growing number of studies have assessed posttraumatic growth related to the current pandemic; but, none have considered whether reported growth is real or illusory (i.e., characterized by avoidant or defensive coping that results in higher levels of distress). The purpose of this study was to extend this literature by assessing growth specific to the pandemic in people reporting high levels of COVID-related stress and estimating the extent of real and illusory COVID-19-related growth.

Methods: Participants were 893 adults from Canada and the United States with high levels of COVID-related stress who provided complete responses on measures of posttraumatic growth, disability, and measures of general and COVID-related distress as part of a larger longitudinal survey.

Results: Approximately 77 % of participants reported moderate to high growth in at least one respect, the most common being developing greater appreciation for healthcare workers, for the value of one’s own life, for friends and family, for each day, as well as changing priorities about what is important in life and greater feelings of self-reliance. Consistent with predictions, cluster analysis identified two clusters characterized by high growth, one comprising 32 % of the sample and reflective of real growth (i.e., reporting little disability and stable symptoms across time) and the other comprising 17 % of the sample and reflective of illusory growth (i.e., reporting high disability and worsening symptoms). These clusters did not differ in terms of socially desirable response tendencies; but, the illusory growth cluster reported greater increases in alcohol use since onset of the pandemic.

Conclusion: Consistent with research regarding personal growth in response to prior pandemics and COVID-19, we found evidence to suggest moderate to high levels of COVID-related growth with respect to appreciation for healthcare workers, life, friends and family, and self-reliance. Findings from our cluster analysis support the thesis that many reports of COVID-related personal growth reflect ineffectual pandemic-related coping as opposed to true growth. These findings have important implications for developing strategies to optimize stress resilience and posttraumatic growth during chronically stressful events such as pandemics.

1. Introduction

There is now considerable evidence showing widespread emotional distress associated with the COVID-19 pandemic. For example, data from systematic reviews and meta-analyses suggest that 15–25 % of the general population worldwide have experienced clinically significant levels of anxiety- or stress-related symptoms in response to COVID-19 (Arora & Grey, 2020; Cénat et al., 2020) and that an even greater proportion have experienced increases in general distress (Xiong et al., 2020). Likewise, there is evidence of considerable distress specific to COVID-19. Several investigators have reported elevated levels of fear of infection (Lee, 2020; Ahorsu et al., 2020; Mertens, Gerritsen, Duijndam, Salemink, & Engelhard, 2020; Park et al., 2020) and pandemic-specific adjustment disorder called the COVID Stress Syndrome (Taylor et al., 2020a). The latter has five features: danger and contamination fears, socioeconomic concerns, xenophobia, traumatic stress symptoms, and compulsive checking and reassurance seeking (Taylor et al., 2020a; Taylor, Landry, Paluszek, Rachor, & Asmundson, 2020). Likewise, there is emerging evidence that some people have developed posttraumatic stress disorder in response to COVID-19-related events (Bridgland et al., 2020).
Despite the widespread negative impact of the COVID-19 pandemic on mental health, it is possible, as is the case for other severe or prolonged stressful events (e.g., war, natural disaster, life-threatening medical illness), that some people may experience positive personal changes (e.g., greater appreciation for life, stronger bonds with others) as a consequence of their experiences with the pandemic (Cheng et al., 2006; Tamiolaki & Kalaitzaki, 2020). Such positive changes are referred to as posttraumatic growth (PTG; Tedeschi, Park, & Calhoun, 1998).

PTG, also known as benefit finding, stress-related growth, or finding “silver linings,” refers to the positive, transformative power of suffering; that is, psychological changes that occur as a result of undergoing some stressful event, such as a deeper appreciation for friends and family, improved resilience, enhanced spirituality, greater confidence in one’s ability to handle adverse events, a greater appreciation for life, and recognition of new possibilities or paths in one’s life (Tedeschi & Calhoun, 2004). PTG originally referred to major changes in beliefs, attitudes, or ways of relating to the world (e.g., finding greater meaning or purpose in life), and has been expanded to include more minor, but potentially important changes (e.g., having a greater appreciation for the little things in life).

Prior to COVID-19, research on non-pandemic stressors suggested that 53% of people experienced moderate-to-high levels of PTG (Wu et al., 2019). Emerging evidence indicates that, to the extent to which COVID-19 is conceptualized as a significant and potentially traumatic stressor, many people (i.e., 39–89%) have reported PTG as a consequence of their pandemic-related experiences (e.g., Chen et al., 2021; Chi et al., 2020; Kalaitzaki, 2021; Pan Cui et al., 2021; Pietrzak, Tai, & Southwick, 2021; Stellard, Pereira, & Barros, 2021); but, these findings are limited by one or more of reliance on cross-sectional designs, small samples, and failure to specifically ask whether experiences of growth were relative to COVID-19.

It is not clear whether PTG for pandemics is similar to PTG for other potentially traumatic stressors such as environmental disasters like wildfires, floods, or earthquakes. Remarkably, to our knowledge there has been almost no research into PTG in past pandemics (Taylor, 2019). PTG as a result of the SARS outbreak has been examined in a preliminary fashion. As a result of going through the SARS outbreak, there were reports of PTG among some people, including a strengthening of professional identity and perceived importance of one’s job for nursing students (Heung, Wong, Kwong, To, & Wong, 2005) and, among the general public, greater appreciation of friends and family (Lau, Yang, Tsui, Pang, & Wing, 2006). Research into pandemic-related PTG is important in order to better understand psychological reactions to COVID-19 and to anticipate potential reactions to future pandemics. Such studies are important because they can provide clues as to how stress resilience and PTG might be optimally enhanced during chronically stressful events such as pandemics.

Recent evidence indicates that it is important to distinguish between real and illusory PTG. Emerging evidence indicates that some reports of PTG may reflect dysfunctional attempts to cope with stressful events, characterized by avoidant or defensive coping that results in heightened distress (Boerner, Joseph, & Murphy, 2017; Engelhard, Lommen, & Sijbrandij, 2015; McFarland & Alvaro, 2000). PTG (as assessed by the PTG Inventory; Tedeschi & Calhoun, 1996) and distress are correlated; for example, meta-analytic research indicates that the mean correlation between PTG and the severity of PTSD symptoms is 0.32 (Shakespeare-Locke & Lock, 2014). The positive correlation may arise for several reasons. Some people might experience PTG as part of their struggle to cope with distressing life events (e.g., becoming highly anxious about infection but also developing a greater appreciation for friends and family). Other people might report to have experienced PTG as part of a self-deceptive strategy (e.g., motivated reasoning) to try to self-assure that one is coping better than they really are (e.g., becoming progressively more and more anxious but telling yourself that you are growing more resilient to stress).

By definition, PTG involves positive (i.e., adaptive) psychological changes. Distress can be part of this process of adaptation; however, high levels of distress in addition to functional impairment (i.e., impairment in social and occupational functioning) indicate poor or inadequate coping, especially if there is evidence of a progressive deterioration in functioning. If a person’s emotional distress and functional impairment deteriorate over time, and yet the person claims to have experienced important PTG (e.g., report that their stress resilience has improved), then it is likely that the growth is illusory. If this is the case, then the high prevalence of self-reported PTG as a consequence of COVID-19 (Chen et al., 2021; Pan Cui et al., 2021) denotes an overrepresentation of actual growth and is more likely a combination of ineffectual pandemic-related coping (i.e., illusory growth) and real personal growth.

Given the pervasive and prolonged distress associated with the COVID-19 pandemic (Arora & Grey, 2020; Cenat et al., 2020; Taylor et al., 2020b) and limitations surrounding preliminary findings that the pandemic presents a growth opportunity for many (Chen et al., 2021; Chi et al., 2020; Pan Cui et al., 2021), the purpose of this study was to extend this literature by assessing growth specific to the pandemic and to estimate the extent of real and illusory COVID-19-related growth. To do so, we assessed the nature and extent of PTG in response to COVID-19 at approximately four months after declaration of the pandemic (T2; from July 20-Aug 7 2020) in people who reported high levels of COVID-19 stress at initial assessment at the outset of the pandemic (T1; Mar 21-Apr 1 2020). To explore the extent to which reported growth was real versus illusory, scores on measures of COVID-19-related PTG and functional disability at T2 as well as changes in symptom scores on the COVID Stress Scales (Taylor et al., 2020b) and other measures of mental health (see 2.2 Measures) assessed at T1 and T2 were subjected to a dynamic clustering procedure to identify patterns in responses. We predicted several patterns of responses, as follows: (1) reports of low PTG regardless of self-reported disability or changes in symptoms from T1 to T2 would be consistent with lack of significant personal growth, (2) reports of high PTG accompanied by little self-reported disability and decreasing symptoms from T1 to T2 would be consistent with real PTG, and (3) reports of high PTGI along with moderate to high self-reported disability and stable or increasing symptoms from T1 to T2 would be indicative of illusory growth. We also assessed differences between identified clusters with regard to demographics, socially desirable responding, and increases in alcohol consumption since onset of the pandemic (as a proxy to maladaptive coping, given that increased alcohol consumption during the pandemic has been associated with distress, poor coping during lockdown, and impairment in functioning; Taylor et al., 2020c).

2. Method

2.1. Sample and data collection procedures

As part of a larger multi-wave population-representative assessment, data were collected at several time points (i.e., T1, Mar 21-Apr 1 2020; T2, July 20-Aug 7 2020), separated by approximately four months, using an internet-based self-report survey. The survey was delivered in English by Qualtrics, a commercial survey sampling and administration company. All participants completed assessments at both time points. Qualtrics selected and contacted participants to meet sampling quotas based on age, gender, ethnicity, socioeconomic status, and geographic region within each country. Filters were used to eliminate data from careless or incomplete respondents. At T1, four attention-check items were embedded in the survey (e.g., “This is an attention check, please select ‘Strongly Agree’”; “For our research, it is really important that you paid attention while responding to our survey. How attentive were you when responding?”: “Very Inattentive” to “Very Attentive”). At T2, there were three attention-check items due to the shorter length of the survey. Participants were included in the final sample if they provided correct responses to three or more of the four attention checks at T1 and two or
more of the three attention checks at T2 (e.g., “Strongly agree” or “Very attentive”), indicating that they were sufficiently attentive. In addition, at the end of the assessment battery, participants were asked to indicate, in their honest opinion, whether we should use their data. Those who responded “no” were excluded from data analysis, regardless of their score on the attention-check items. Incomplete item responses were rare (< 5% per scale). Only those participants reporting high levels of COVID stress (i.e., scores of 37 or more on the COVID Stress Scales; Taylor et al., 2020a) at T1, suggesting that they perceived the pandemic as a significant and potentially traumatic stressor, were included in this study. The research described in this article was approved by the Research Ethics Board of the University of Regina (REB# 2020-043) and all respondents provided written informed consent prior to completing the survey.

2.2. Measures

Respondents completed a general demographics questionnaire wherein they indicated their country of residence, age, sex, ethnicity, employment status, education level, and household income at T1. They also completed the following measures at both T1 and T2 or at T2 only.

2.2.1. Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996)

The PTGI was administered at T2 to assess perceived growth and positive changes over the course of the pandemic. The original scale comprises 21 items (e.g., I have a greater appreciation for the value of my own life) rated on a 6-point scale ranging from 0 (I did not experience this change as a result of my crisis) to 5 (I experienced this change to a very great degree as a result of my crisis). Scale anchors were modified for the current study such that “as a result of my crisis” was replaced with “as a result of COVID-19” and an additional six items (e.g., I developed a better appreciation for my community) were added. The PTGI has demonstrated excellent internal consistency across a variety of stressful events (Taku, Cann, Calhoun, & Tedeschi, 2008) and corroborated with observer self-reports (Shakespeare-Finch & Barrington, 2012). For the current study, Cronbach’s alpha for the PTGI was excellent (α = .98).

2.2.2. COVID-19 Disability Scale (CDS; modified from Sheehan, Harnett-Sheehan, & Raj, 1996)

The CDS is a 3-item measure of functional impairments associated with COVID-19-related stress in domains of work or school, social life, and leisurely activities. Items are rated on a 5-point scale ranging from 0 (not at all) to 4 (extremely). The CDS was administered at T2. Cronbach’s alpha for the CDS was good (α = .86).

2.2.3. Patient Health Questionnaire-4 (PHQ-4; Kroenke, Spitzer, Williams, & Lowe, 2009)

The PHQ-4, a measure of current anxiety and depression, comprises four items assessing how often in the past week respondents have been bothered by problems related to anxiety and depression. Items are scored on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). Current anxiety and depression are each measured using two items, with higher scores indicating greater levels of anxiety or depression. The PHQ-4 has been validated for use in both clinical and non-clinical samples (Kroenke et al., 2009; Lowe et al., 2010). The PHQ-4 was administered at T1 and T2. For the current study, Cronbach’s alpha for the PHQ-4 was excellent at T1 (α = .89) and T2 (α = .93).

2.2.4. Short Health Anxiety Inventory (SHAI; Salkovskis, Rimes, & Warden, 2002)

The SHAI is an 18-item measure designed to assess health anxiety as well as physical health status. The health anxiety subscale of the SHAI was used in the present study to measure health anxiety independent of physical health status using 14 items rated on a 4-point frequency of occurrence scale (e.g., I do not, I occasionally, I spend much of my time, I spend most of my time) over the past six months. The SHAI has good reliability and validity in both clinical and non-clinical samples (Abramowitz, Deacon, & Valiente, 2007; Salkovskis et al., 2002; Wheaton, Berman, Franklin, & Abramowitz, 2010). The SHAI was administered at T1 and T2. For the current study, Cronbach’s alpha for the 14-item health anxiety subscale was excellent at T1 (α = .89) and T2 (α = .91).

2.2.5. COVID Stress Scales (CSS; Taylor et al., 2020b)

The CSS consists of 36 items forming 5 scales: (1) danger and contamination fears (DAN), (2) fears about socioeconomic consequences (SEC), (3) xenophobia (XEN), (4) compulsive checking and reassurance seeking (CHE), and (5) traumatic stress symptoms (TSS). Each scale comprises six items, with the exception of DAN, which consists of 12 items. Items within DAN, SEC, and XEN are scored on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely), where respondents are asked to indicate the extent to which they have experienced various COVID-19-related worries in the past week. Items within CHE and TSS are scored on a 5-point Likert scale ranging from 0 (never) to 4 (almost always). For these scales, respondents are asked to indicate how often they have engaged in compulsive checking or reassurance seeking behaviours, and how frequently they experience problems related to traumatic stress in the past week. Higher scores on the CSS are indicative of greater levels of COVID-19-related stress. The CSS have demonstrated robust psychometric properties and good-to-excellent internal consistencies (Taylor et al., 2020b). The CSS were administered at T1 and T2. For the current study, Cronbach’s alphas ranged from good to excellent at T1 (α = .80 to α = .91) and T2 (α = .88 to α = .95) for the individual scales and was excellent for the total scale score at T1 (α = .92) and T2 (α = .96).

2.2.6. Marlowe-Crowne Social Desirability Scale Short Form (MCSD-SF; Reynolds, 1982)

The MCSD-SF assesses socially desirable response tendencies with 13 true or false statements (e.g., I sometimes feel resentful when I don’t get my way). This version of the scale has been shown to have superior reliability and validity compared to other brief forms of the Marlowe-Crowne Scale Standard Form (Reynolds, 1982). The MCSD-SF was administered at T1. Cronbach’s alpha in the current study was acceptable (α = .71).

2.2.7. Alcohol use (Taylor, Paluszek, Racher, McKay, & Asmundson, 2020)

Alcohol consumption was assessed with a single face-valid yes/no question assessing whether alcohol consumption had increased during the pandemic. Such retrospective assessments are commonly used in substance use research (e.g., Rodriguez, Litt, & Stewart, 2020), have been found to have acceptable levels of reliability and validity (e.g., Robinson, Sobell, Sobell, & Leo, 2014), and yielded similar findings to a more detailed measure (i.e., the Alcohol Use Disorders Identification Test; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) in our previous research on the relationship between alcohol use and COVID stress (Taylor, Paluszek, et al., 2020).

2.3. Statistical procedures

Using a strategy similar to that of Jansen, Hoffmeister, Chang-Claude, Brenner, and Arndt (2011), we calculated mean PTGI item scores and operationalized moderate to high PTG on any PTGI item using percentage of participants with mean item scores of ≥3. Chi-square analyses and subsequent examination of adjusted standardized residuals were used to examine T1 demographic differences between those who did and did not report moderate to high PTG on each PTGI item. Dynamic cluster analysis was used to determine patterns of COVID-related PTG, wherein PTGI and CDS scores at T2 were compared with changes in scores from T1 to T2 on measures of distress (i.e., PHQ-4, SHAI, and CSS). Using clustering strategies similar to those reported in previous research (Babbin, Velicer, Aloia, & Kushida, 2015;
Taylor et al., 2005), Ward’s method with squared Euclidean distance metric was first conducted to establish a suitable number of clusters. K-means clustering was then used to determine the consistency of the cluster solution. Chi-square analyses were conducted between Ward’s method and K-means clustering to test the association between the two methods. To compare demographic, social desirability, and alcohol use variables between the identified clusters, one-way between subjects ANOVAs with bootstrapping and chi-square analyses with inspection of adjusted standardized residuals and z-tests were conducted. To reduce potential Type I error from conducting numerous statistical analyses in the study, but without using a stringent correction such as Bonferroni that might potentially introduce Type II error (Taylor et al., 2005), the alpha level was set to .001.

3. Results

3.1. Sample characteristics

The sample comprised 893 adults from Canada (n = 453) and the United States (n = 440) who provided complete data at T1 and T2. Their mean age was 50.9 years (SD = 14.0 years, range 19–87 years). Forty-eight percent were female. At T1, most (59%) were employed full- or part-time, while others were retired (24%), students (2%), unemployed (e.g., on leave; 15%) or designated otherwise (e.g., freelance; 4.4%). At both T1 and T2, 3% identified themselves as a healthcare worker. Most (81%) had completed full or partial college, and most (65%) were White, with the remainder being Asian (14%), African American/Black (9%), Latino/Hispanic (7%), or other (6%). At T1, 17.2% of the sample reported having a pre-existing mental health disorder. At each of T1 and T2, only 1.6% and 2.6% of the sample, respectively, reported being diagnosed with COVID-19. Mean total score on the PTGI was 42.8 (SD = 31.6) and on the CDS was 3.1 (SD = 3.0). Mean scores on measures of distress and T1 and T2 and mean change scores from T1 to T2 are shown in Table 1.

3.2. COVID-related PTG

Item scores on the PTGI are shown in Table 2 along with the percentage of participants reporting moderate to high COVID-related PTG on each item (i.e., scoring ≥3 on each item). Mean PTGI item scores were reflective of very small to small degrees of PTG overall, with all mean item scores except “I developed a better appreciation for healthcare workers” ranging between 1.2 (SD = 1.4) and 2.1 (SD = 1.6); however, 77% of participants reported growth in at least one respect. The most common types of growth were developing better appreciation for healthcare workers (57%), having greater appreciation for the value of one’s own life (44%), developing stronger appreciation for friends and family (43%), better appreciating each day (38%), changing priorities about what is important in life (35%), and greater feelings of self-reliance (34%). The least common types of growth related to greater willingness to express emotions (22%), being a more positive person (22%), finding new opportunities (22%), and establishing a new path in life (21%).

There were differences in the proportions of participants reporting moderate to high COVID-related growth on certain items as a function of ethnicity (χ²(4) = 19.2–35.1, ps < .001, Cramer’s Vs = .15–.20), age (χ²(2) = 18.6–25.9, ps < .001, Cramer’s Vs = .15–.18), and employment (χ²(3) = 17.2–25.6, ps < .001, Cramer’s Vs = .15–.17). Specifically, there were greater proportions of Black/African American individuals

### Table 1

| Variable | Time 1 | Time 2 | Change Scores |
|----------|--------|--------|---------------|
|          | M (SD) | M (SD) | M (SD)        |
| PHQ-4    | 4.2 (3.4) | 2.8 (3.3) | -1.4 (3.3)    |
| SHAI     | 12.7 (6.5) | 12.7 (7.1) | 0.07 (5.3)    |
| Total CSS| 62.1 (21.2) | 47.1 (26.7) | -15.1 (21.5) |
| CHE      | 8.3 (5.3) | 4.5 (5.1) | -3.8 (4.9)    |
| TSS      | 6.3 (5.4) | 4.2 (5.2) | -2.2 (5.1)    |
| SEC      | 11.1 (5.6) | 7.3 (6.3) | -3.8 (6.1)    |
| XEN      | 10.2 (6.4) | 8.7 (7.0) | -1.5 (5.9)    |
| DAN      | 26.2 (8.9) | 22.4 (11.1) | -3.8 (9.7)    |

Note: N = 893. PHQ-4 = Patient Health Questionnaire-4. SHAI = Short Health Anxiety Inventory. CSS = COVID Stress Scales. CHE = Checking and Reassurance-seeking Scale. TSS = Traumatic Stress Symptoms Scale. SEC = Socioeconomic Consequences Scale. XEN = Xenophobia Scale. DAN = Danger and Contamination Scale.

### Table 2

| Scale | Item | M (SD) | % reporting moderate-to-high PTG |
|-------|------|--------|-------------------------------|
| N     | I developed a better appreciation for healthcare workers | 2.6 (1.7) | 57 |
| AL    | I have a greater appreciation for the value of my own life | 2.1 (1.5) | 44 |
| N     | I developed a stronger appreciation for my friends and family | 2.1 (1.6) | 43 |
| SC    | I can better appreciate each day | 1.9 (1.6) | 38 |
| AL    | I changed my priorities about what is important in life | 1.9 (1.5) | 35 |
| PS    | I have a greater feeling of self-reliance | 1.7 (1.5) | 34 |
| RO    | I put more effort into my relationships | 1.7 (1.5) | 34 |
| PS    | I have stronger religious faith | 1.7 (1.6) | 33 |
| PS    | I am more willing to express my feelings | 1.7 (1.6) | 32 |
| N     | I developed a better appreciation for my community | 1.7 (1.5) | 32 |
| PS    | I am better able to accept the ways things work out | 1.6 (1.5) | 30 |
| PS    | I discovered that I’m stronger than I thought I was | 1.6 (1.5) | 29 |
| N     | I learned important new coping skills | 1.6 (1.5) | 29 |
| NP    | I can do better things with my life | 1.6 (1.5) | 29 |
| NP    | I am more likely to try to change things that need changing | 1.6 (1.5) | 28 |
| RO    | I more clearly see that I can count on people in times of trouble | 1.5 (1.5) | 27 |
| RO    | I better accept needing others | 1.5 (1.5) | 27 |
| RO    | I have a greater sense of closeness with others | 1.4 (1.5) | 26 |
| RO    | I learned a great deal about how wonderful people are | 1.4 (1.5) | 25 |
| N     | I have developed new interests or hobbies | 1.4 (1.5) | 25 |
| SC    | I have a better understanding of spiritual matters | 1.3 (1.5) | 24 |
| N     | I developed a better appreciation for our government | 1.3 (1.5) | 24 |
| N     | I have become a more positive person | 1.3 (1.4) | 22 |
| RO    | I am more willing to express my emotions | 1.3 (1.5) | 22 |
| NP    | New opportunities are available which wouldn’t be otherwise available | 1.2 (1.5) | 22 |
| SC    | I have stronger religious faith | 1.2 (1.5) | 23 |
| NP    | I established a new path for my life | 1.2 (1.4) | 21 |

Note: N = 893. Scales: AL = appreciation for life, N = new item, NP = new possibilities, PS = personal strength, RO = relating to others, SC = spiritual change.
and lower proportions of White individuals who expressed moderate to high COVID-19-related growth in relation to changes in spirituality (e.g., “I have stronger religious faith”). There was also a lower proportion of White individuals who reported moderate to high COVID-19-related growth in relation to personal strength (e.g., “I discovered that I’m stronger than I thought I was”), coping skills, and positivity. For age, there was a greater proportion of participants aged 18–24 years and a lower proportion of participants aged 55 years or older who reported...

### Table 3

Descriptive statistics for the four clusters.

| Variable          | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | One-way Between Subjects ANOVA |
|-------------------|-----------|-----------|-----------|-----------|---------------------------------|
|                   | n = 394   | n = 283   | n = 153   | n = 63    |                                 |
|                   | M (SD)    | M (SD)    | M (SD)    | M (SD)    |                                 |
| PTGI              | 30.9 (26.9) | 54.7 (31.5) | 59.6 (29.2) | 23.1 (22.1) | 1 < 2.3, 1 - 4, 2 - 3, 2 > 4, 3 > 4 |
| CDS               | 1.4 (1.6) | 4.0 (2.6) | 6.1 (3.5) | 2.2 (2.2) | 2 < 3, 3 > 4, 1 < 3, 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| SHAI change       | -0.3 (3.8) | -1.3 (5.6) | 4.3 (6.0) | -1.7 (5.0) | 1 - 2, 1 < 3, 2 - 3, 2 > 4, 3 > 4 |
| PHQ-4 change      | -1.1 (2.5) | -1.8 (3.39) | 0.2 (3.5) | -4.8 (3.6) | 1 < 3, 1 - 2, 1 < 3, 2 - 3, 2 > 4, 3 > 4 |
| Total CSS change  | -14.7 (13.8) | -21.7 (13.3) | 12.5 (15.9) | -55.3 (17.6) | 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| DAN change        | -4.1 (7.8) | -5.2 (7.3) | 5.9 (8.1) | -19.4 (8.4) | 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| XEN change        | -2.0 (4.9) | -2.6 (5.2) | 4.2 (5.4) | -7.4 (6.0) | 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| SEC change        | -4.7 (4.8) | -4.2 (5.3) | 2.0 (5.7) | -11.1 (5.4) | 1 < 3, 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| CHE change        | -2.6 (3.5) | -6.1 (4.6) | -1.0 (5.4) | -7.8 (5.5) | 1 < 3, 1 - 2, 1 - 3, 2 - 3, 2 > 4, 3 > 4 |
| TSS change        | -1.3 (3.3) | -3.7 (4.4) | 1.4 (6.0) | -9.8 (4.9) | 2 < 3, 2 > 4, 3 > 41 |

Note: N = 893. Clusters are based on Ward’s method using squared euclidean distance metric. PTGI = Posttraumatic Growth Inventory. CDS = COVID-19 Disability Scale. SHAI = Shortened Health Anxiety Inventory. PHQ-4 = Patient Health Questionnaire – 4. CSS = COVID Stress Scales. DAN = Danger and Contamination Fears. XEN = Xenophobia Scale. SEC = Socioeconomic Consequences Scale. CHE = Checking and Reassurance Seeking Scale. TSS = Traumatic Stress Symptoms Scale. Positive values on the change scores indicate increasing scores. Negative values on the change scores indicate decreasing scores.

* One-way between subjects ANOVAs were bootstrapped with 2500 samples using 99.9% CIs. Omnibus F-tests results were as follows: F(3, 889) = 67.0, p < .001, η² = .18 for PTGI; F(3, 889) = 164.8, p < .001, η² = .34 for CDS; F(3, 889) = 48.9, p < .001, η² = .28 for SHAI change; F(3, 889) = 41.4, p < .001, η² = .12 for PHQ change; F(3, 889) = 375.5, p < .001, η² = .56 for CSS change; F(3, 889) = 167.3, p < .001, η² = .36 for DAN change; F(3, 889) = 93.9, p < .001, η² = .24 for XEN change; F(3, 889) = 111.3, p < .001, η² = .27 for SEC change; F(3, 889) = 76.3, p < .001, η² = .21 for CHE change; F(3, 889) = 117.1, p < .001, η² = .28 for TSS change. Pairwise comparisons were conducted using Games-Howell’s post hoc test due to unequal group sizes and, in some cases, unequal variances.
moderate to high COVID-related growth in relation to changes in interests or hobbies. A lower proportion of participants aged 55 years or older also reported moderate to high COVID-related growth for establishing a new path for their life; however, the reverse pattern was observed for greater appreciation for healthcare workers. For employment, there was a greater proportion of employed participants and a lower proportion of retired participants who reported moderate to high COVID-related growth in regard to a number of experiences related to new possibilities (e.g., “I can do better things with my life”) as well as developing new interests or hobbies. Employed participants also tended to report moderate to high COVID-related growth in respect to developing new coping skills. There were no differences for sex, education, or presence of a pre-existing mental health disorder on any items (all ps > .001). Further details on the chi-square analyses comparing demographic characteristics between those who did report and did not report moderate to high COVID-related growth are provided in Supplement Table 1.

3.3. Patterns of PTG and COVID-19 responses

Based on the degree of change in the coefficients of the agglomerative schedule and inspection of the dendrogram produced using Ward’s method, a four cluster solution was identified as the best solution. K-means clustering was specified to extract four clusters. A chi-square between Ward’s method clusters and K-means clusters indicated a significant association between the two approaches, $\chi^2(9) = 437.37, p < .001$, Cramer’s V = .40, strengthening confidence that we were identifying meaningful clusters.

The descriptive statistics of the four clusters identified using Ward’s method are provided in Table 3. Clusters 1 and 4, respectively comprising 44% and 7% of the sample, represented the low PTG groups. They were similar in that both reported low levels of PTG and disability at T2, both had minimal reductions in health anxiety and general distress from T1 to T2, and both had modest reductions in COVID-related stress from T1 to T2. The primary difference between these groups was that reductions in COVID-related stress from T1 to T2 were more substantive for Cluster 4 compared to Cluster 1. Clusters 2 and 3, respectively comprising 32% and 17% of the sample, represented the groups with real and illusory PTG. Cluster 2 was characterized by high levels of PTG and moderate disability at T2, minimal reductions in health anxiety and general distress from T1 to T2, and modest reductions on all measures of COVID-related stress from T1 to T2. On the other hand, Cluster 3 had equally high levels of PTG and the highest levels of disability at T2 accompanied by minimal changes in general distress but substantial worsening of health anxiety and all indices of COVID-19 stress, with the exception of CHE, from T1 to T2.

The four clusters were further characterized with comparisons on demographics, the MCSD-SF at T1, and alcohol consumption at T3. There were some significant differences between clusters on sex ($\chi^2(3) = 16.7, p < .001$, Cramer’s V = .14); more specifically, Cluster 4 had a higher proportion of females and a lower proportion of males than Cluster 1. Clusters also differed in some respects on the prevalence of pre-existing mental health disorders ($\chi^2(3) = 17.3, p < .001$, Cramer’s V = .14), with Cluster 3 having a higher proportion than Cluster 1. There were no differences between clusters on level of education (p = .288), ethnicity (p = .004), employment (p = .002), or age (p = .001). Likewise, there were no differences on the MCSD-SF at T1 between the clusters (p = .441). The clusters did, however, differ on alcohol use at T2 ($\chi^2(3) = 18.5, p < .001$, Cramer’s V = .17). Cluster 3 had a greater proportion and Cluster 1 had a lower proportion of those who endorsed increased alcohol use during the pandemic.

4. Discussion

The aim of this investigation was to examine the prevalence of self-reported PTG in response to the COVID-19 pandemic and, using data from a longitudinal study, to estimate the extent of real and illusory COVID-19-related growth. Consistent with prior research regarding PTG in response to COVID-19 (e.g., Chen et al., 2021; Chi et al., 2020; Kalaitzaki, 2021; pan Cui et al., 2021; Pietrzak et al., 2021; Stellard et al., 2021), there was evidence that participants from Canada and the United States who reported high levels of pandemic-related stress experienced moderate to high levels of COVID-related growth on various items of the PTGI. Overall, 77% of people reported experiencing one or more positive changes in their lives as a result of COVID-19. The most common types of growth were developing better appreciation for healthcare workers, having greater appreciation for the value of one’s own life, developing stronger appreciation for friends and family, better appreciating each day, changing priorities about what is important in life, and greater feelings of self-reliance. The least common types of growth related to greater willingness to express emotions, being a more positive person, finding new opportunities, and establishing a new path in life. While reported personal growth did differ somewhat as a function of ethnicity, employment, and age, it was not impacted by sex, education, or presence of a pre-existing mental health disorder. These results suggest that almost anyone can experience personal growth as a result of the pandemic.

Beyond assessing growth specific to the pandemic, we were also interested in estimating the extent of real and illusory COVID-19-related growth. Previous investigators have suggested that some reports of PTG are not indicative of actual growth in the face of stressful and challenging circumstances but, instead, reflect maladaptive coping efforts that ultimately result in higher levels of distress (e.g., Boerner et al., 2017; Engelhard et al., 2015; McFarland & Alvaro, 2000). Findings from our cluster analysis supported this thesis and our related predictions; specifically, two of the four identified clusters, representing 49% of the sample, reported higher levels of PTG but with differing patterns of disability and changes in symptom severity over the course of the pandemic. Cluster 2 had minimal disability and decreasing symptoms from T1 to T2, reflecting real PTG. Cluster 3 had moderate to high disability and stable or increasing symptom severity from T1 to T2. The combination of self-reported personal growth accompanied by deteriorating emotional health and functional capacity suggests the possibility of illusory growth, a form of ineffective coping. Although our assessment of maladaptive coping at T2 was limited, in line with this idea, Cluster 3 also reported increased alcohol use during the pandemic relative to the other clusters. The distinction between, and identification of, real and illusory growth are critical in developing appropriately tailored strategies to optimize stress resilience and PTG during chronically stressful events such as pandemics.

Researchers studying PTG and clinicians treating people distressed by COVID-19 who report positive personal changes need to consider the distinction between real and illusory growth and understand that reports of growth may reflect ineffective coping if accompanied by disability or worsening general and COVID-specific mental health. Assessment of disability and symptom changes over time may aid in case conceptualization and appropriate treatment planning.

A key question is how we might facilitate the development of PTG in order to help people become more resilient to COVID-19 and other stressors and whether such efforts will differentially benefit those reporting real versus illusory growth. Various psychological interventions, such as cognitive-behavioral methods and stress management training, can improve psychological functioning and facilitate PTG (Xu et al., 2016; Liu et al., 2020; Roepke, 2015). PTG can be facilitated by social support (Allieche, Ifeqwazi, Onyishi, & Mefob, 2019; Mangelsdorf & Eid, 2015), and by encouraging the use of adaptive coping styles, such as positive reframing (Peters et al., 2021). PTG is negatively correlated with experiential avoidance; that is, the tendency to avoid unpleasant thoughts, emotions, or sensations (Kashdan & Kane, 2011). This suggests that PTG could be facilitated by discouraging experiential avoidance and, instead, encouraging more adaptive strategies such as mindfulness, which has been shown to improve well-being (van Agteren et al., 2017; Engelhard et al., 2015; McFarland & Alvaro, 2000). Findings from our cluster analysis supported this thesis and our related predictions; specifically, two of the four identified clusters, representing 49% of the sample, reported higher levels of PTG but with differing patterns of disability and changes in symptom severity over the course of the pandemic. Cluster 2 had minimal disability and decreasing symptoms from T1 to T2, reflecting real PTG. Cluster 3 had moderate to high disability and stable or increasing symptom severity from T1 to T2. The combination of self-reported personal growth accompanied by deteriorating emotional health and functional capacity suggests the possibility of illusory growth, a form of ineffective coping. Although our assessment of maladaptive coping at T2 was limited, in line with this idea, Cluster 3 also reported increased alcohol use during the pandemic relative to the other clusters. The distinction between, and identification of, real and illusory growth are critical in developing appropriately tailored strategies to optimize stress resilience and PTG during chronically stressful events such as pandemics.

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et al., 2021). Pandemics entail a great deal of uncertainty and so cognitive-behavioral methods for improving one’s tolerance of uncertainty may also facilitate PTG. Protocols for facilitating PTG are discussed in further detail elsewhere (Calhoun & Tedeschi, 2013; Tedeschi & Moore, 2016; Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018). It is likely that strategies used for enhancing true PTG and resilience might be adapted and applied to those reporting illusory growth, helping transform the illusion into a tangible gain; however, more research is needed to establish whether illusory growth should be directly challenged or subtly modified. Given that participants in our real and illusory growth clusters did not significantly differ in terms of socially desirable response tendencies, it is unlikely that those with illusory growth were being intentionally deceptive or engaging in some sort of impression management. The extent to which the illusion represents a maladaptive attempt to cope as opposed to serving some positive adaptive function to stress remains to be determined.

The current study is not without its limitations. First, the results are based on self-reported data collected through an online survey. Such an approach was necessary given pandemic-related public health measures and restrictions at the various time points of data collection. Second, direct comparison of growth to other studies of COVID-related PTG is limited, given the reliance on different measures and varied operationalizations of “moderate to high” growth across studies as well as the paucity of studies regarding illusory growth. Third, PTG was only assessed at T2; as such, we were unable to determine whether perceptions of growth also changed over the course of the pandemic. Fourth, perceptions of growth were assessed approximately 4 months following declaration of the pandemic and at a time when concerns were once again increasing with the onset of the second wave of infections in Canada and the United States (Asmundson & Taylor, 2020); as such, findings may not reflect patterns of growth at various points over the extended and dynamic course of the pandemic. Finally, the assessment of maladaptive coping strategies at T2 was limited to increased alcohol use. Future research should investigate illusory PTG in relation to use of other potentially maladaptive coping strategies (e.g., recreational drug use) and lack of adaptive coping strategies (e.g., not exercising). Notwithstanding these limitations, the findings of the current study are, to the best of our knowledge, the first to distinguish between real and illusory PTG in those experiencing significant distress specific to the COVID-19 pandemic. Further research is needed to better understand real and illusory personal growth during chronically stressful events and to develop accessible and scalable interventions to promote resilience and growth under such circumstances.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.janxdis.2021.102418.

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