

Chapter 28: POSTTRAUMATIC GROWTH DURING THE COVID-19 PANDEMIC

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Abstract

This chapter reviews the extant research on posttraumatic growth during the COVID-19 pandemic. Implications of secondary stressors and compounding crises associated with the pandemic are considered. Relevant theoretical concepts are integrated; the methodological rigor of the literature is evaluated; and implications for individuals, clinicians, organizations and policymakers to consider as they engage with pandemic recovery efforts and plan for future crises are included.

The COVID-19 pandemic has been an unprecedented traumatic event, embodying elements of both acute and chronic stressors (Garfin & Estes, 2022) with far reaching implications for mental health and well-being. Research conducted early in the pandemic (Holman et al., 2020) and throughout (Ettman et al., 2020; Rudenstine et al., 2021) demonstrated that the crisis has been associated with increases in traumatic stress responses including anxiety, depression, and acute and posttraumatic stress (PTS: Cénat et al., 2021; Cooke et al., 2020). Yet posttraumatic growth (PTG), which often occurs in tandem with traumatic stress responses (Solomon & Dekel, 2007) has also been documented (Vazquez et al., 2021), in alignment with

reports of people finding positive benefits associated with the COVID-19 pandemic (Kowalski et al., 2021). This chapter will provide a brief overview of PTG during prior collective traumas and review the extant literature on PTG during COVID-19, including a critique of the current research and suggestions for future inquiry.

PTG during Prior Collective Traumas and Personal Illness

The COVID-19 pandemic has embodied aspects of acute traumatic events and personal illness; devastating sickness and death has occurred at the individual-level, with many grieving the death of loved ones and others managing the debilitating effects of long-COVID (Garfin & Estes, 2022). The pandemic has also been a chronic, collective trauma, with psychological effects rippling throughout society for those both directly and indirectly exposed (Silver et al., 2021). Indirect, media-based exposure and secondary stressors (e.g., education disruption, financial loss) that occurred both as a result of widespread infection and associated mitigation efforts (e.g., restrictions on movement, business closures) has resulted in protracted exposure over the course of many months and years. Moreover, the crisis has been compounded by co-occurring stressors including intense weather events, overwhelmed hospitals, social unrest, and economic recession, which have created a confluence of stressors associated with increased acute stress, ongoing worry, and symptoms of depression and traumatic stress (Holman et al., 2020; Silver et al., 2021).

PTG during Prior Collective Trauma

Prior research on collective traumas, such as terrorism (Rime et al., 2010; Solomon & Dekel, 2007) natural disasters (Włodarczyk et al., 2017) and infectious disease outbreaks (Rzeszutek et al., 2016; Rzeszutek & Gruszczyńska, 2021) suggests that both children and adults can experience PTG during community crises. For example, after terrorist attacks in Spain, adult

participants reported giving greater importance to intrinsic motivations and increased gratitude for the “smaller things” in life (Nadeem et al., 2019; Rime et al., 2010). Research with adult survivors of the 2010 8.8 magnitude earthquake in Chile found PTG can occur across multiple dimensions, including individual, spiritual, community, and societal growth (Włodarczyk et al., 2017).

Some variability in reports of event related PTG have been explained by key indices of adversity exposure. For example, direct objective exposure (e.g., damage to home, injury, or threat to life), subjective exposure (e.g., self-reported reactions such as fear or worry), and indirect exposure (e.g., learning about the event from others, contact with media coverage, or living near the affected community) have been associated with PTG in children and adolescents (Bernstein & Pfefferbaum, 2018). In adults, self-report intensity of direct, earthquake-related traumatic experience were positively associated with PTG, suggesting that severity of adverse exposure may elicit greater experiences of growth (Włodarczyk et al., 2017). Taken together, these examples suggest that despite the strong association between the COVID-19 pandemic and psychological distress, experiences of PTG and resilience may also be common, with pandemic-related exposures associated with increased experiences of growth.

PTG during Personal Illness

The experience of contracting and caring for those with COVID-19 may also associated with PTG during the pandemic. Indeed, PTG has been documented following the micro-level experience of illness including HIV (Lau et al., 2018), SARS (Cheng et al., 2006; Cheng & Wong, 2005) and cancer, and for those with Huntington’s Disease and their caregivers (Luszczynska et al., 2012). Collectively, research on illness-related PTG has found that PTG can manifest as increased optimism (Cheng & Wong, 2005), self-confidence (Cheng et al., 2006),

compassion for others (Lau et al., 2018), spirituality (Cheng et al., 2006; Cheng & Wong, 2005; Luszczynska et al., 2012), and a focus on the importance of family and friends (Lau et al., 2018). Moreover, cognitive representations (i.e., personal control, treatment control, and illness coherence) may be positively associated with illness-related PTG through factors including self-efficacy and hopefulness (Lau et al., 2018). Such findings suggest the experience of contracting and surviving COVID-19 may paradoxically also be associated with some positive psychological benefits including the experience of PTG.

Overview of PTG during COVID-19

The first two years of the COVID-19 pandemic ushered in a staggering amount of research regarding the mental health effects of the crisis, with systematic reviews documenting the relationship between the pandemic and various forms of psychological distress including anxiety, depression (Pashazadeh Kan et al., 2021; Xiong et al., 2020) and PTS (Salehi et al., 2021) in adults; high prevalence of mental health problems have been noted in children and adolescents as well (Ma et al., 2021). Yet as documented in previous accounts of growth associated with collective trauma exposure, an increasing body of literature suggests PTG may be a common experience during COVID-19 as well (Na et al., 2021). More specifically, COVID-19 related PTG has been evidenced in healthcare (Zhang et al., 2021) and other frontline workers (Cui et al., 2021), tourism employees (Luu, 2022) and in clinical samples (Sun et al., 2021). Taken together, these findings demonstrate the widespread phenomenon of COVID-19-related PTG that occurred despite the unprecedented disruption and adversity experienced worldwide.

Literature on PTG experienced during COVID-19 has evaluated growth using a variety of indicators, yielding a rich picture of the type of growth people experienced. Reports of PTG-related experiences were common: one online study (N=311) found that over 90% of

respondents reported at least one type of growth experience (Jin et al., 2020). Common experiences across samples included greater appreciation of life (Asmundson et al., 2021; Jin et al., 2020; Na et al., 2021; Stallard et al., 2021), improved relations with others (Arnout & Al-sufyani, 2021; Jin et al., 2020; Stallard et al., 2021), changed priorities (Asmundson et al., 2021; Pietrzak et al., 2021), and increased personal strength (Arnout & Al-sufyani, 2021; Jin et al., 2020). Increased sense of gratitude was also common, as demonstrated in a sample of veterans (Pietrzak et al., 2021) and in a random sample of Saudi respondents (Arnout & Al-sufyani, 2021). Relatedly, some reported feeling a greater appreciation for friends, family, and healthcare workers (Asmundson et al., 2021). Other outcomes included greater spiritual connection (Arnout & Al-sufyani, 2021; Stallard et al., 2021), discovering and embracing new possibilities (Stallard et al., 2021), greater feelings of self-reliance (Asmundson et al., 2021), and feeling like it was possible to “rise above the trauma” (Foli et al., 2021).

Personal growth was also expressed as increased self-care and exploration of meaningful activities. For example, in a sample of 1175 New Zealand residents, many reported increased personal development that included self-care activities, developing new skills or habits, improved personal health due to healthier diets, increased physical exercise, and better sleep (Jenkins et al., 2021). Nurses working with COVID-19 patients also described increased self-care as consequence of adapting to and managing stress (Foli et al., 2021). Personal growth was exemplified in a qualitative study of Italian adolescents: 33% reported positive experiences related to “discovering oneself.” and reported finding pleasure in spending time with oneself and exploring meaningful hobbies such as reading, listening to music, art, and working out (Fioretti et al., 2020).

Populations Studied and Methods Implemented

Healthcare Workers

A substantial portion of the early research on PTG during COVID-19 focused on healthcare workers (Chen et al., 2021; Kalaitzaki, 2021; Kalaitzaki et al., 2021; Lee & Lee, 2020; Zhang et al., 2021). Despite reporting pandemic-related burnout and ambivalent feelings towards patients, during COVID-19 many nurses reported concurrent PTG, often related to finding positive meaning in their work (Li et al., 2021; Zhang et al., 2021). In-depth interviews with 18 COVID-19 hospital nurses in South Korea found that they reported new feelings of pride and satisfaction in their profession as they felt they were making a tangible contribution to the fight against COVID-19 (Lee & Lee, 2020). Early on, healthcare professionals often responded to the pandemic with increased levels of distress, which was, in some cases, replaced by personal growth as the pandemic continued (Kalaitzaki et al., 2021). Yet, longitudinal findings of frontline healthcare workers during COVID-19 indicated that factors such as high early burnout and emotional exhaustion contributed to lower PTG over time (Lyu et al., 2021), suggesting that efforts seeking to reduce burnout could help facilitate PTG and other growth-related outcomes compared to distress and impairment.

The extent to which healthcare workers reported PTG during COVID-19 varied, with experiential and social factors associated with key differences (Chen et al., 2021). For example, in a sample of 12,596 nurses, 39.3% reported PTG during the pandemic, with rates higher for participants who worked in COVID-19 designated hospitals or with COVID-19 patients compared to those who worked with other patients (Chen et al., 2021). Compared to non-frontline nurses, being a front-line nurse who interacted or offered treatment directly to patients diagnosed with COVID-19 was associated with reporting higher levels of PTG (Li et al., 2021). Similarly, a study of 1,790 clinical nurses, assessed in June 2020 in China, found a “moderately

high” level of PTG among clinical nurses, with social support and self-efficacy positively associated with PTG (Zhang et al., 2021). A longitudinal study of psychotherapists, many transitioning to online services, found that PTG was associated with vicarious trauma exposure as well as more acceptance of online therapy at baseline (Doorn et al., 2021). Such data suggests that although potentially more stressful and challenging, in healthcare workers, more direct and secondary (vicarious) COVID-19-related experiences may have elicited greater experiences of growth and resilience, particularly if such experiences were accompanied by self-confidence, self-efficacy, and social support rather than burnout.

General Populace

PTG has also been documented in the general populace: studies have been conducted in the United States (Na et al., 2021), Canada (Asmundson et al., 2021), Europe (Miragall et al., 2021), China (Cui et al., 2021), Turkey (Ikizer & Gul, 2021), and elsewhere, lending cross-cultural credibility to findings. Yet many of these studies relied on cross-sectional data and convenience sampling, limiting the strength of inferences. For example, an e-mail recruitment strategy was used to assess French residents in early March (Miragall et al., 2021); various online opt-in survey platforms (Jin et al., 2020) and snowball samples (Robles-Bello et al., 2020) were also common. One exception was a study from Spain that used a quota-based, stratified sampling strategy to recruit a representative sample (N=2,122) (Vazquez et al., 2021). That study found that primary beliefs in goodness, identification with humanity and openness to the future were associated with PTG, while suspicious beliefs and lower primal beliefs about goodness were associated with posttraumatic impairment. Some studies were representative of the target population but did not report details of the recruitment method (Robles-Bello et al., 2020). While the use of convenience samples and cross-sectional data allowed for early findings to emerge to

provide preliminary insights regarding PTG during an unprecedented global phenomenon, they may also have contributed to inconsistent findings across some studies.

Several early studies found relatively low levels of PTG (Arnout & Al-sufyani, 2021; Feng et al., 2021; Jin et al., 2020) at the onset of the pandemic. This could be due to lower exposure to secondary stressors associated with the beginning phases of the pandemic on (e.g., loss of a loved one, physical illness, financial strain), that subsequently emerged over time. Relatedly, as postulated by Robles-Bello et al. (2020), early in the pandemic, lower perceptions of personal risk and low compliance with restrictions in some communities may have led to less disruption and stress, and consequently, less growth through adversity. However, one study from Indonesia found that, despite reports of traumatic stress responses, those responses were not associated with stress-related growth (Kaloeti et al., 2021). However, the small (N=119) non-representative (86.6% women), non-probability-based sample may limit inferences. Indeed, in contrast, a large (N=29,118) study of Chinese adults assessed in early 2020 found positive associations between PTS and PTG (Zhao et al., 2021).

Clinical Samples

Despite evidence that PTG can often emerge post-illness, the research on PTG in clinical samples during COVID-19 is relatively nascent. Qualitative findings from participants recruited from a COVID-19 hospital in Shanghai, China (interviewed between April-July 2020) found that many reported common growth experiences including re-evaluating values and priorities, improved social relationships, and general personal growth (Sun et al., 2021). Likewise, in a sample (N=140) of recently discharged COVID-19 patients in Hunan, China, assessed with an online nurse supervised questionnaire, patients reported finding new possibilities, identification of personal strengths, and enhanced relation with others (Yan et al., 2021). That study also

found that those living in non-urban areas exhibited higher PTG compared to those in urban areas, suggesting contextual factors in the community may contribute to resilience. Finally, a qualitative study of nurses (N=18) diagnosed with COVID-19 found that although the experience of being diagnosed with COVID-19 was associated with negative experiences such as fear or death and stigma, it was also associated with positive experiences including PTG and engaging in more empathetic and prosocial nursing care (Aydin & Assistant, 2021).

Relatedly, one study assessed the trajectory of PTG in a sample of 422 individuals experiencing COVID-19 related bereavement (Chen & Tang, 2021). That study found four latent classes related to grief, PTSD, and PTG, with heterogeneity between groups: resilience (low prolonged grief and PTSD and high PTG; 10.7% of respondents), growth (high prolonged grief, PTSD, and PTG; 20.1% of respondents), moderate (moderate scores on prolonged grief, PTSD, and PTG; 42.2% of respondents), and high (high scores on prolonged grief, PTSD, and PTG; 27% of respondents), with factors including closeness to the deceased and whether the loss was of a partner predicting moderate and high PTG scores. Such findings suggest more severe experiences were associated with concurrent PTSD and PTG, in alignment with prior studies of collective trauma that linked severity of adversity exposure and PTSD with PTG.

Caregivers

Additional populations studied with respect to COVID-19-related PTG included caregivers of children. For example, one study found that while many mothers were managing a variety of pandemic-related stressors (including remote work, reduced income, homeschooling, and COVID-19-related illness in the family), they also reported experiences of PTG commonly identified in other samples (e.g., improved relationships, a greater appreciation of life, positive spiritual change) as well as experiences unique to caregivers (Stallard et al., 2021). These unique

experiences included the adoption of a better work-family balance and the acquisition of new technology-related competencies that helped with children's education and socialization. Some parents also viewed the opportunity to home school as a positive outcome, reporting "this has been a wonderful experience." Importantly, the number of positive experiences was negatively correlated with anxiety and positively correlated with well-being, suggesting that growth experiences can occur in the absence of psychological distress.

Children, Youth, and Young Adults

Systematic reviews have documented the deleterious mental health impacts of the COVID-19 pandemic and related public health interventions (e.g., school closures) on children's mental health (Packer et al., 2022; Samji et al., 2021). Indeed, the COVID-19 pandemic brought a host of stressors unique to younger individuals, including school closures, and alteration of key life narratives (Fioretti et al., 2020) such as online graduations and lack of opportunities to participate in team sports (Garfin & Estes, 2022). Yet qualitative analyses from a sample of Italian female adolescents (mean age=16.6) found that despite the identification of negative themes including "anguish and loss," a number of positive experiences were also reported (Fioretti et al., 2020). These positive aspects included being part of an extraordinary experience, discovering oneself, rediscovering family, and sharing life at a distance. Similar to findings from adults, a sample of 683 adolescents in China found heterogeneity in growth trajectories that suggest distress and growth occurred concurrently during COVID-19 (Zhen & Zhou, 2021). Despite this overall heterogeneity, trajectories indicating growth tended to be associated with positive refocusing and reappraisal, suggesting those cognitive mechanisms could bolster adaptive responses even in the context of high distress.

Relatedly, several studies focused on young adults and university students. For example, a longitudinal survey of U.S. young adults (N=805; mean age=24) found that, in general, PTG remained relatively low in this sample, with PTSD and COVID-19-related worry positively associated with PTG, and depression negatively associated with PTG (Hyun et al., 2021). Likewise, a convenience sample of 99 university students who completed an online survey in Poland found PTSD and PTG were positively associated (Tomaszek & Muchacka-cymerman, 2020). However, the non-representativeness of those sample (for example, 78% and 85% were 85% were women, respectively) limit broad inferences.

Older Adults

Despite being more at risk for COVID-19-related complications compared to younger individuals, limited work has focused specifically on older adults. In one sample of older adults (age 55 or older), who were senior students at the University of Experience (University of Barcelona), only 25% reported higher PTG after the forced lockdown in Spain (in March-April 2020). On average, the sample reported the highest PTG subscale as appreciation of life” and the lowest for “spiritual change” (Celdran et al., 2021). Yet the cross-sectional nature and sample of that and other studies limit relevance to a gerontological sample more broadly. Interestingly, that study found both increases and decreases in loneliness were associated with the experience of PTG, suggestion that altered life circumstances, whether positive or negative, might lead individuals to seek experiences of growth during adverse life events.

Correlates of COVID-19 Related PTG

Research has documented a variety of indicators associated with COVID-19 related PTG, elucidating heterogeneity in responses. Some of these factors included demographic indicators

(e.g., age, socioeconomic status, race/ethnicity), coping techniques (including cognitive strategies and styles), social support, and other psychosocial predictors.

Demographic Indicators

Gender. Across a variety of studies, women, on average, reported higher PTG than men. This was evident in a sample of hospitality workers (Luu, 2022), a nationally representative sample of U.S. military veterans (Na et al., 2021), a sample of 12,596 nurses in Japan (Chen et al., 2021), a sample of young adults (Hyun et al., 2021), and the populace more generally (Kalaitzaki, 2021). This may be because women tend to report higher distress symptoms including PTS, which often correlated with growth experiences during COVID-19 (Kalaitzaki, 2021) and following trauma more generally. Yet the data linking gender and PTG have not been definitive: some studies found null effects of gender on PTG (Casali et al., 2021; Ikizer & Gul, 2021); others did not report the results of gender in their multivariate models (Feng et al., 2021), including one study with a representative sample (Vazquez et al., 2021). Importantly, the non-representativeness of many early studies on the psychological effects of COVID-19 (which often included more women) could be potential reason for these inconsistent findings (Robles-Bello et al., 2020).

Age. The experience of PTG during COVID-19 has been documented in age-specific samples across the lifespan (Celdran et al., 2021; Fioretti et al., 2020; Packer et al., 2022; Samji et al., 2021; Tomaszek & Muchacka-cymerman, 2020; Zhen & Zhou, 2021). Parsing out which age groups are more likely to experience PTG during COVID-19 has been elusive, with some studies demonstrating non-linear relationships between PTG and age (e.g., middle age had highest PTG) (Zhao et al., 2021) and others not finding a relationship between age and PTG (Casali et al., 2021). Yet in a study looking at healthcare workers (Kalaitzaki et al., 2021) and a

separate study looking at adult residents in the United States (Northfield & Johnston, 2021), age was negatively correlated with PTG, specifically in the dimensions of relating to others and being open to new possibilities. This could be because younger individuals may be more open to changing their cognitive schema's (Kalaitzaki et al., 2021), or due to the fact that in general age has been negatively correlated with traumatic stress responses throughout the COVID-19 pandemic (Holman et al., 2020), which in turn, could elicit the experience of PTG.

Socioeconomic Status. The relationship between the socioeconomic indicators of education and income and PTG during COVID-19 has also been inconsistent. Some studies have reported null effects (Hamam et al., 2021; Pietrzak et al., 2021); other studies reported positive correlations between income and PTG (Yildiz, 2021) and education and PTG (Cui et al., 2021; Zhang et al., 2021). Yet others found negative relationships between education and PTG (Ikizer & Gul, 2021). Some research demonstrated non-linear effects: for example, Feng and collaborators (2021a) reported that those with lower education (e.g., less than high school) or those who had completed some college experienced more PTG. In contrast, Zhao et al. (2021) found that those with a high school education had the highest PTG compared to those with less or those with more education. Lastly, several studies reported assessing socioeconomic indicators a part of an assessment of demographic indicators (Chen et al., 2021; Vazquez et al., 2021), but did not detail findings of specific relationships. Taken together, more work on the relationship between socioeconomic status and PTG during COVID-19 is needed, particularly given the widely documented inequity in exposure to COVID-19-related stressors across different groups (Shigemoto, 2021).

Race/Ethnicity. Several studies reported differences in COVID-19-related PTG according to racial/ethnic group identification. For example, results from a study of Canadian

and U.S. adults (N=893) found that, compared to individuals identifying as White, those identifying as African American/Black reported higher PTG (Asmundson et al., 2021). This finding was also mirrored in a smaller MTurk sample, which found that participants identifying as non-White/European American reported higher PTG compared to those identifying as White/European American (Shigemoto, 2021). One explanation is underrepresented minorities may have faced additional stressors such as health inequalities and discrimination, which were exacerbated by the COVID-19 pandemic, driving higher distress and in turn PTG. Yet this phenomenon did not extend to individuals identifying as Asians: both US-born and foreign-born Asian participants were less likely to report COVID-19-related PTG compared to White participants (Hyun et al., 2021). Hyun and collaborators (2021) postulated that Asian-specific racism and increased violence and hate crimes targeted at Asian communities may have made it particularly difficult to report finding benefits during the COVID-19 pandemic (Hyun et al., 2021). These paradoxical findings regarding between group differences should be clarified with future research.

PTG and Coping

PTG may be both a cause and a correlate of effective coping strategies during an ongoing, chronic stressor such as COVID-19. Indeed, PTG may be viewed both as a result of the experience of adversity and a type of cognitive coping strategy that occur as the result of surviving trauma; thus, as with prior research on PTG, research conducted in relation to COVID-19 found that coping and PTG often demonstrated significant correlations (Yan et al., 2021). Importantly, both adaptive and maladaptive coping strategies were associated with PTG (Kalaitzaki et al., 2021). For example, in a sample of healthcare workers in Greece, problem-focused coping (e.g., positive reframing) and emotion focused coping (e.g., self-distraction)

partially mediated the relationship between secondary traumatic trauma exposure and PTG, while maladaptive coping (e.g., denial) fully mediated the relationship (Kalaitzaki et al., 2021). This suggests certain types of avoidance and emotion-focused coping may be beneficial at promoting some types of PTG (including personal strength and appreciation of life), at least in short-term assessments. This is in alignment with prior research that support the efficacy of both avoidant and non-avoidant coping strategies, with some avoidant strategies associated with short-term positive coping and non-avoidant strategies predicting more positive adaption long term (Suls & Fletcher, 1985). In the context of COVID-19, this signals the need for longitudinal research to parse out the effectiveness of coping strategies over time.

Cognitive coping strategies and styles. During stressful and traumatic events, cognitive coping processes help individuals understand and process the event and their “shattered assumptions” about the safety and security of the world around them (Janoff-Bulman, 1992; Tedeschi & Calhoun, 2004). Variability in the use of such cognitive process were associated with variability in PTG during COVID-19. For example, cognitive strategies such as positive refocusing and reappraisal were associated with growth, while deliberate rumination, catastrophizing and “putting it in perspective” were associated with distress (Zhen & Zhou, 2021). Prior research suggests deliberate rumination or meaning making tends to be associated with growth experiences and intrusive ruination tends to show more mixed effects (Tedeschi & Calhoun, 2004). Data collected during COVID-19 tend to support the relationship between deliberate rumination and PTG. For example, in the summer of 2020, in a sample of 685 Turkish adults, deliberate rumination (as opposed to intrusive rumination) was associated with COVID-19-related PTG (Ikizer & Gul, 2021). This suggests deliberately thinking about the meaning of COVID-19 with a focus on finding solutions may have contributed to growth experiences. Such

findings were also evidenced in a sample of 918 Chinese college students: deliberate rumination enhanced the relationship between the experience of COVID-19 related PTG and resilience (Zeng et al., 2021). Finally, in a sample of tourism workers during the COVID-19 shutdown, deliberate rumination was positively associated with positive stress mindset, particularly in the context of high family support, which in turn was associated with PTG (Luu, 2022). Taken together, these results suggest PTG may occur as part of cognitive coping strategies that include finding meaning and sense making during adverse experiences (Silver et al., 1983; Updegraff et al., 2008), which can facilitate the process of PTG.

Social Support

Despite the consistent finding that PTG is associated with stress, adversity, and COVID-19 related distress responses, social support during COVID-19 appeared to buffer the negative psychological effects of the pandemic, leading to PTG. Indeed, various forms of social support were associated with PTG throughout the pandemic including support from family (Northfield & Johnston, 2021; Yan et al., 2021) and friends (Northfield & Johnston, 2021) and contacts more generally (Zhang et al., 2021). A cross-sectional study of 296 adults residing in the United States (assessed in August 2020) found that social support from both friends and family was associated with PTG, with perceived social support moderating the relationship between distress and PTG (Northfield & Johnston, 2021). Nurses working with COVID-19 patients reported social support from family, friends, and the public in general as being associated with PTG (Lee & Lee, 2020). Finally, in a sample of 4000 individuals from 21 countries, social connection (specifically compassion and social safeness) was associated with both PTS and PTG, whereas social disconnection was associated with only PTS (Matos et al., 2021). Marital status and having children, demographic indicators which could be a proxy for social support, was also associated

with PTG, although quality of that support and type – which are likely impactful – were not assessed (Li et al., 2021). These results suggest increasing social support could be a fruitful way to increase PTG during COVID-19 and future crises.

Other Psychosocial Factors

Other psychological factors positively associated with PTG during COVID-19 include self-efficacy (Lee & Lee, 2020; Zhang et al., 2021) and self-esteem (Yan et al., 2021), suggesting that one's perception of their ability to effectively manage the stress of the pandemic facilitated or allowed for growth to occur. The character trait of humanity, where individuals place a higher value on interpersonal relationships was also associated with PTG (Casali et al., 2021), aligning with research documenting improved interpersonal relationships as a key aspect of pandemic-related PTG. Emotional creativity, which relates to originality of emotional experience and expression, was associated with PTG (Zhai et al., 2021). This personality trait could help with a more positively reframing of the negative experience of COVID-19. Finally, both anger (Yan et al., 2021) and extroversion were associated with PTG (Feng et al., 2021), although the implications of those relationships has been underexplored, yielding ample opportunity for future research.

Limitations of the Extant Research and Future Directions

The dynamic nature of the COVID-19 pandemic presented unique challenges for psychological researchers. As with many disasters, investigators were tasked with balancing the need for rapid information with research rigor (Garfin & Silver, 2016; Silver & Garfin, 2016). Unfortunately this resulted in many early studies of the psychological effects of the COVID-19 pandemic being defined by online surveys and convenience samples, many of which were not collected using probability based methods, instead relying on the more biased methods of

snowball sampling, word-of-mouth, and social media (Pierce et al., 2020). The literature on PTG during COVID-19 tended to follow that trend. As noted by Pierce et al. (2020), such methodological weaknesses can result in samples that disproportionately represent individuals who are more engaged and interested in the topic, and studies may often miss vulnerable groups including those with low socioeconomic status, limited internet access, older individuals and those with pre-COVID-19 mental health problems. Such convenience samples can bias results, particularly for making prevalence-based estimates (Bradley et al., 2021).

Future research should also target specific populations at risk for both distress and growth, and include a nuanced assessment of COVID-19 exposures. For example, most of the research on PTG during the COVID-19 pandemic has focused on workers, those in the healthcare industry, and the general public; less literature has focused on those dealing with a COVID-related personal loss or virus contraction. As many grapple with the effects of long-COVID, those experiencing persistent problems could also be a target population for future research on PTG (Sudre et al., 2021). Relatedly, few studies took a nuanced approach to exploring the relationship between specific COVID-19 related stressors and PTG, although research suggests these stressors varied greatly across respondents and were differentially associated with psychosocial outcomes (Garfin et al., 2021).

The sampling timeframe of many studies also limits the extant knowledge of PTG during COVID-19. Many studies reviewed herein were conducted in the early phase of the COVID-19 pandemic, and may not have been enough time for the process of PTG emerge (Asmundson et al., 2021; Vazquez et al., 2021). With some notable exceptions (e.g., Doorn et al., 2021; Lyu et al., 2021; Zhen & Zhou, 2021), the extant literature on PTG during COVID-19 was also typically cross-sectional in design, limiting an examination of trajectory of responses, which prior research

on infectious disease outbreaks shows can be important in evaluating responses over time (Rzeszutek & Gruszczyńska, 2021) Research using a longitudinal design must be conducted to understand the long-term effects that the COVID-19 pandemic has on PTG over time, particularly important as the COVID-19 pandemic waxes and wanes and new collective trauma emerge (Silver et al., 2021). As we emerge from the acute phase of the COVID-19 pandemic, studying PTG can help delineate when healing begins and the experience of PTG may emerge more predominantly, facilitating the experience of recovery and resilience that may strengthen people for future challenges.

Implications and Recommendations

During the COVID-19 pandemic, the experience of PTG was associated with increased psychological resilience (Chen & Tang, 2021; Zeng et al., 2021) as well as other benefits including reduced odds of suicidal ideation in a sample of veterans (Pietrzak et al., 2021). Given these benefits, clinicians, organizations, and policy makers should utilize research on PTG and related constructs to guide recovery efforts from COVID-19 and inform strategies to help guide adaption to future uncontrollable stressors and viral outbreaks, which scientist suggest will increase in the future (Khetan, 2020).

More specifically, suggestions from a review of PTG and resilience in workers during COVID-19 suggested that organizational programs and workshops could be implemented to develop adaptive coping strategies (e.g., deliberate rumination, positive reappraisal) (Finstad et al., 2021). Qualitative data from nurses caring for COVID-19 patients yielded a set of proposed guidelines including implementing counseling programs for patients and nurses and increasing staffing to combat mental health ailments and facilitate growth experiences (Lee & Lee, 2020).

The current research has delineated areas of interest that should be considered by practitioners and when designing interventions that take the effects of COVID-19 into account. Vazquez et al. (2021) recommends the implementation of interventions that promote positive cognitions about the goodness of the world and human nature. These cognitive-based interventions may have positive effects on PTG. Others note that interventions emphasizing self-compassion and increased resilience are among the most promising for reducing the risk of compassion fatigue among volunteers (Gonzalez-Mendez & Díaz, 2021). Effective coping strategies have also been identified as an area to target to enhance COVID-19 related growth experiences (Kalaitzaki et al., 2021; Zhang et al., 2021). Yet Kalaitzaki et al. (2021) suggest while a variety of strategies may help individuals to cope and adapt to stressful events, some may not fit the strict classification of positive coping strategies (e.g., avoidant techniques. (Zhang et al., 2021). However, more research on such topics is needed: indeed, ineffective coping mechanisms may be related to illusory PTG, rather than sustained resilience and positive change (Asmundson et al., 2021). Relatedly, in addition to coping styles, since both social support and self-efficacy were positively correlated with PTG, interventions that target those factors as well should be designed and evaluated, particularly for nurses and other healthcare professionals who will be dealing with the trauma of COVID-19 as the pandemic shifts toward endemicity.

Workplace policies for healthcare professionals dealing with COVID-19 patients as well as other industries at high-risk for exposure and relate COVID-19-relate distress (Garfin et al., 2022) can also utilize PTG-related research findings to promote recovery and adaption in the wake of COVID-19. Indeed, an early commentary published in *JAMA* noted that involuntary, intrusive and unresolved memories of traumatic experiences can lead to PTSD, while directed and deliberate reflection allows for growth, providing an opportunity to promote strategies for a

more resilient work force (Olson et al., 2021). Similarly, others have proposed real-world systematic infection control education as well as educational programs that focus on the mental and physical health of nurses and patients to promote COVID-19-related PTG (Lee & Lee, 2020). Future work should leverage these preliminary findings into guidelines and best practices to be used by clinicians, organizations, and policy makers.

Conclusions

In summary, despite the widespread adversity and distress associated with the COVID-19 pandemic, many also reported silver linings including PTG and other related psychosocial benefits. These positive experiences do not negate the social, psychological, and economic suffering associated with the protracted pandemic. However, they do provide insights into how individuals adapt and respond to adversity such as the COVID-19 pandemic, and provide useful information to guide evidence-based interventions that promote growth during times of crisis.

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