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Social Support and Resilience as Moderators of the Relationship between COVID-19 Pandemic-Related Trauma and Posttraumatic Growth in U.S. Adults

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Previous research has established a positive association between COVID-19-related trauma and posttraumatic growth (PTG), but few studies have examined the factors that influence the strength of that relationship. The current study used an electronic survey to investigate the relationship between U.S. adults' COVID-19-related trauma and PTG and the degree to which their perceived social support and psychological resilience served as moderators of that relationship. Data (n = 378) were gathered through a crowdsourcing platform in April, 2023. Analyses indicated a significant positive relationship between COVID-19-related trauma and PTG. In addition, both perceived social support and psychological resilience were supported as significant moderators of that relationship. Not only did higher levels of each variable predict a stronger relationship between trauma and growth, but they also had an interactive effect where having higher levels of both predicted the strongest relationship of all. This research establishes perceived social support and psychological resilience as key moderators of the relationship between COVID-19-related trauma and PTG. These results hold implications for how future research and therapeutic practice might benefit from focusing on perceived social support and psychological resilience as key factors in the psychological recovery from COVID-19.

Keywords: COVID-19, trauma, posttraumatic growth, social support, resilience

On January 31, 2020 the U.S. declared a public health emergency in response to the emergence of the 2019 novel coronavirus (COVID-19). Many Americans experienced highly stressful and even traumatic consequences of the COVID-19 pandemic, including dramatic shifts in their home and work lives, battling the constant risk of infection, and suffering through the illness itself which resulted in more than 1.1 million deaths in the U.S. alone (CDC, 2023; Northfield & Johnston, 2022). More than three years later, on May 11, 2023, the U.S. declared an official end to the COVID-19 public health emergency. While many of the challenges created by the pandemic remain, the transition to a "post-pandemic" mindset has presented an opportunity for reflection. Looking back on the whole of the pandemic, what existential changes have Americans experienced? And what factors were associated with more positive outcomes? The current study was undertaken to examine the relationship between the trauma suffered due to COVID-19 and the extent of any psychological growth that may have occurred as a result. More specifically, we focused on the degree to which the relationship between COVID-19-related trauma and PTG was moderated by psychological resilience and perceived social support.

As people experience a traumatic event, they not only face the immediate and practical concerns of the event itself, but also a more existential threat as their psychological safety and sense of meaning can be called into question (Janoff-Bulman & Berg, 1998; Taylor, 1989). However, as trauma recedes, there is also an opportunity to reflect. Posttraumatic growth (PTG) represents the idea that as people process a traumatic event, they are forced to reconceptualize their understanding of life, and, in doing so, may find new forms of meaning and appreciation that they would not have gained had the precipitating event not occurred (Tedeschi & Calhoun, 1996). PTG can take on many forms, traditionally categorized into five main areas: gaining an increased "appreciation of life," feeling greater closeness through "relating to others," experiencing religious growth and "spiritual change," perceiving "new possibilities" for one's future, and increasing one's perceived "personal strength," through perseverance (Janoff-Bulman, 2004).

COVID-19 and PTG

While PTG experiences can stem from any type of traumatic event, health threats are a particularly well-established catalyst of growth (Barskova & Oesterreich, 2009). Studies of Americans during the first two years of the COVID-19 pandemic have found high levels of psychological trauma and early evidence of PTG among frontline healthcare workers (Feingold et al., 2022), military veterans (Pietrzak et al., 2021; Na et al., 2021), college students (Governale et al., 2024), and a more general cross-section of adults residing in the U.S. (Northfield & Johnston, 2022). Notably, one study conducted early in the pandemic (Hyun et al. 2021) found only very low levels of PTG in American young adults, leaving the possibility that the development of PTG may require sufficient time

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for reflection. In each of the above studies, a higher degree of trauma was associated with greater PTG, demonstrating that the growth achieved is often proportional to the suffering endured.

In addition to establishing the existing relationship between higher degrees of trauma and greater psychological growth, the literature also reveals a number of factors that predict PTG outcomes. For instance, being younger, having a female gender identity, belonging to a racial group other than European American, being a first-generation college student, and having a stronger religious identity each have been associated with higher levels of COVID-19-related PTG (Feingold et al., 2022; Governale et al., 2024; Na et al., 2021; Northfield & Johnston, 2022; Wiley et al., 2022). Psychological factors such as higher levels of well-being, lower rates of depression, experiencing more positive emotions, engaging in positive reframing, or feeling inspired by role models have also been correlated to higher levels of COVID-19-specific PTG (Feingold et al., 2022; Hyun et al. 2021; Lewis et al. 2022; Wiley et al., 2022).

For the current study, we chose to focus on two potential moderators of the relationship between COVID-19 trauma and PTG: perceived social support and psychological resilience. While these are not the only factors that play a role in COVID-19-related PTG, they were chosen specifically because of the prolonged nature of the pandemic and the social isolation experienced by most U.S. residents during that time. Perceived social support has been previously established to have a significant influence on the relationship between health-related trauma and PTG. For example, an international study of over 4,000 participants revealed that COVID-19-related PTG was positively associated with feelings of social connection and negatively associated with feeling socially disconnected (Matos et al., 2021). In the U.S., one investigation found preliminary evidence for perceived social support from friends and family (though curiously not from significant others) to be a predictor of COVID-19-related PTG (Northfield & Johnston, 2022). Another study found evidence linking PTG to perceived support from humans as well as from pets (Dominick et al., 2022). Given the isolating nature of the COVID-19 lockdown, perceived social support remains a likely influence on the extent to which individuals experienced PTG in response to COVID-19-related trauma.

Resilience is the ability to adapt, recover, and grow stronger in the face of adversity (Arslan & Wong, 2024). Resilience has been shown to influence the relationship between COVID-19-related trauma and posttraumatic growth. For example, a narrative review of 45 publications concluded that resilience in the workplace was a key factor in the development of COVID-19-related PTG (Finstad et al., 2021). In addition, a recent investigation of a global sample of over 13,000 participants revealed that resilience was significantly correlated with an increase in COVID-19-related PTG (Menculini et al., 2021). In the U.S., a study conducted earlier in the pandemic demonstrated that, in a sample of young adults, resilience was again found to be a significant predictor of increased posttraumatic growth (Hyun et al., 2021). Taken together, these studies demonstrate that due to the prolonged nature of the COVID-19 pandemic and the immense toll it took on people's mental health, psychological resilience also is likely to play a significant role in the development of COVID-19-related PTG.

The Current Study

The current study focused on COVID-19-related trauma and PTG, specifically looking at the end of the emergency declaration and the return for many Americans to a post-pandemic day-to-day existence. We designed this study to assess the strength of the relationship between COVID-19-related trauma and PTG and the degree to which perceived social support and psychological resilience moderated any relationship between trauma and growth. Based on our review of the early COVID-19-related PTG literature, we predicted (1) that there would be a moderate, positive correlation between trauma and growth that (2) would be significantly moderated by perceived social support and psychological resilience. Specifically, we hypothesized that higher levels of each factor would in turn be associated with a stronger relationship between trauma and PTG, even when controlling for the demographic factors that might covary with PTG. To test these predictions, we recruited 400 U.S. residents to complete an electronic survey that measured COVID-19-related PTSD, psychological resilience, perceived social support, and PTG as well as key information regarding their COVID-19 experiences.

Method

Participants

On April 19th, 2023, just before the U.S. federal government officially declared the end of the COVID-19 public health emergency, we recruited survey participants through the crowd sourcing site Prolific.co. The survey was limited to U.S. residents and structured specifically to gather a representative sample based on sex, age, and ethnicity, per a simplified version of U.S. census data. Two attention checks were included at approximately the one-third and two-thirds mark of the survey. Of the original 400 participants recruited, 94.5% participants (n = 378) successfully passed both checks and were included in the final sample. Participants were paid $2.50 for an anticipated 15 minutes of work.

Participants were asked their gender and ethnicity as opened-ended questions. They were also asked whether or not they identified as transgender, nonbinary, or gender fluid. Gender and ethnic identity were then coded by two researchers into the following categories: 48.4% cisgender female, 47.6% cisgender male, 1.6% transgender female, 1.1% transgender male, and 1.1% nonbinary / gender fluid. Participant's ethnicity was coded into the following identities: 75.6% White, 11.9% Black, 6.9% Hispanic and Latinx, 5.6% East Asian, 0.8% South Asian, 0.8% Native American, 0.3% Pacific Islander, 0.8% Unspecified. Multiracial individuals (3.7%) were placed in all identity categories they reported. The age of participants ranged from 18 to 85 (M = 45.7, SD = 15.8). Self-selected incomes included 41.3% at less than $50,000, 17.5% between $50,000-$74,999, 24.9% between $80,000-$124,000, and 16.4% at $125,000 and above. Participants gave the state of residence which subsequently was coded into U.S. census categories including the South (39.7%), West (23.3%), Northeast (18.5%), Midwest (16.7%), Hawaii (1.3%), and Alaska (0.3%), with one participant not reporting. In addition, participants rated themselves on how politically conservative (1= very liberal to 9 = very conservative; M = 3.89, SD = 2.32) and how religious (1 = not at all religious to 9 = very religious; M = 3.81, SD = 3.05) they were.

Measures

COVID-19 Related Distress

Following the demographic questions, participants were presented with two scales assessing their level of distress during the COVID-19 pandemic. In both cases, they were specifically instructed to think back to how they felt at the "height" of the pandemic. First, the 17-item PTSD Checklist—Civilian Version (PCL–C; Weathers et al., 1993) was presented using a 5-point scale from 1 (not at all) to 5 (extremely). All items including those assessing numbing, dreams, reminders, and hyperarousal were averaged into a single measure that demonstrated high reliability (α = .948.) In addition, the Psychosocial Functioning during COVID-19 Measure (Arnold et al., 2021) was included to assess changes in global functioning and affective response. However, due to the lower reliability of these subscales (α = .632; α = .809), they were not included in the final analyses.

Psychological Resilience

Next, participants were again reminded to think back to the height of the pandemic and respond to the 10-items of the Connor-Davidson Resilience scale (CD-RISC; Connor & Davidson, 2003), which measured their ability to handle the challenges related to COVID-19 on a scale from 0 (not at all true) to 4 (true nearly all of the time). All items were averaged, with the scale demonstrating high reliability (α = .936.)

Perceived Social Support

Participants then responded to the MOS Social Support Survey (Sherbourne & Stewart, 1991) which was developed to assess the perceived availability of tangible, affectionate, and positive interactions, and emotional/informational support during the pandemic using a 19-item, 5-point scale from 1 (none of the time) to 5 (all of the time). These subscales were again combined into a single measure of social support with high reliability (α = .980.) In addition, participants were asked to estimate the number of close friends and relatives they felt at ease with and could talk to during the height of the COVID-19 pandemic.

Posttraumatic Growth

Finally, participants responded to the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996). The 21-item measure included all five subtypes of posttraumatic growth including relating to others, seeing new possibilities, gaining personal strength, experiencing heightened spirituality, and increasing one's appreciation for life. Participants rated themselves from 1 (did not experience this change as a result of the COVID-19 pandemic) to 6 (experienced this change to a very great degree as a result of the COVID-19 pandemic). While numerous studies have found support for the five elements of PTG as distinct factors, in terms of their associations with other variables, there is evidence to suggest that they essentially all share a similar pattern of relationships with other variables (Silverstein et al., 2018). Therefore, for the purposes of the current research, they were averaged into a single measure of PTG that showed strong reliability (α = .967.)

Procedure

Prior to data collection, this research was deemed exempt by the Wheaton College Institutional Review Board (number: 45cfr46.104(d)(2i); date: 04/10/2023). In Prolific, participants were presented with a brief description of the research topic and the requirement that the survey be taken on a computer or tablet device. They were then directed to a link which brought them to the Qualtrics survey. Participants read and agreed to an informed consent before formally beginning. The survey was completed in an average of 13.7 minutes after which the participants were debriefed and paid.

Analyses

Participants who failed to pass the two attention checks embedded in the survey were removed from the data. Data were visually inspected for participant drop out or irregularities. Only 0.24% of the total data were missing, which we addressed using pairwise deletion. Descriptive statistics were conducted on all variables. To test the first hypothesis, a Pearson correlation was conducted between trauma and PTG. Next, to test the second hypothesis, moderation analysis was conducted with 5000 bootstrapping samples using the PROCESS program (Hayes, 2012), where resilience and social support were examined as potential moderators of the relationship between COVID-19-related trauma and PTG. In order to examine whether trauma and PTG were related to any demographic factors which may act as covariates, Pearson correlations were conducted between trauma and PTG with continuous variables (age, political leanings, and religiosity) and one-way ANOVAs were conducted with categorical variables (race, gender, income, region of United States). Based on these analyses, age, race, gender, religiosity, political leaning, income, and region of the United States were included as covariates in the moderation analysis.

Results

Descriptive statistics indicated that the mean level of COVID-19-related trauma was 1.93 (SD = 0.88) on a scale from 1 to 5 and that the overall mean of PTG was 2.92 (SD = 1.31) on a scale from 1 to 6. Analysis examining the relationship between trauma and the demographic variables indicated that there was a significant relationship between trauma and gender [F (4, 372) = 7.18, p < .001, η^2 = .072], such that cisgender men (M = 1.75, SD = 0.77) had lower levels of trauma than all other gender groups [i.e., cisgender women (M = 2.03, SD = 0.89), transgender women (M = 2.72, SD = 1.30), transgender men (M = 3.07, SD = 1.36), and non-binary/gender fluid (M = 2.82, SD = 1.44); all p < .05)] and that transgender men had higher trauma than cisgender men and cisgender women (p < .05). There were no significant relationships between trauma and age, race, income, political leaning, religiosity, or U.S. region (all p > .05). Analysis examining the relationship between demographic variables and PTG indicated that there was a significant relationship between PTG and race [F (4, 373) = 2.57, p < .038; η^2 = .027)] and between PTG and religiosity [r (333) = .257, p < .001], such that Black participants (M = 3.44, SD = 1.31) showed higher levels of PTG than White participants, (M = 2.82, SD = 1.29; p =.003), and people reporting higher levels of religiosity showed higher levels of PTG. There was not a significant relationship between PTG and age, gender, income, political leaning, or US region (all p > .05).

Pearson correlation analysis examining the relationship between trauma and PTG indicated that there was a significant positive correlation between the two variables [r (378) = .40, p < .001].

Table 1. Regression analysis examining the moderating effects of resilience and social support on the relationship between trauma and posttraumatic growth while controlling for demographic factors

Predicting Posttraumatic Growth	ΔR^2	*b*	*SE*	*t*	*p*	LLCI	ULCI
	.317***						
Constant		2.23	0.62	3.6	0.001	1.01	3.44
Trauma		-0.26	0.23	-0.15	0.25	-0.71	0.18
Resilience		-0.14	0.17	-0.82	0.41	-0.46	0.19
Trauma x Resilience		0.17	0.07	2.39	0.02	0.03	0.30
Social Support		-0.18	0.13	-1.4	0.16	-0.44	0.07
Trauma x Social Support		0.16	0.05	2.77	0.01	0.05	0.27
Covariates							
Age		0.01	0.00	-1.08	0.28	-0.01	0.00
Race		0.09	0.05	1.65	0.10	-0.02	0.19
Gender		-0.06	0.08	-0.55	0.58	-0.21	0.12
U.S. Region		0.04	0.05	0.68	0.49	-0.07	0.14
Income		0.06	0.05	1.08	0.28	-0.05	0.16
Politics		-0.06	0.03	-2.16	0.03	-0.11	-0.01
Religion		0.12	0.02	5.82	0.00	0.08	0.17

*** $p < .001$; LLCI = lower level of 95% confidence interval; ULCI = upper level of 95% confidence interval

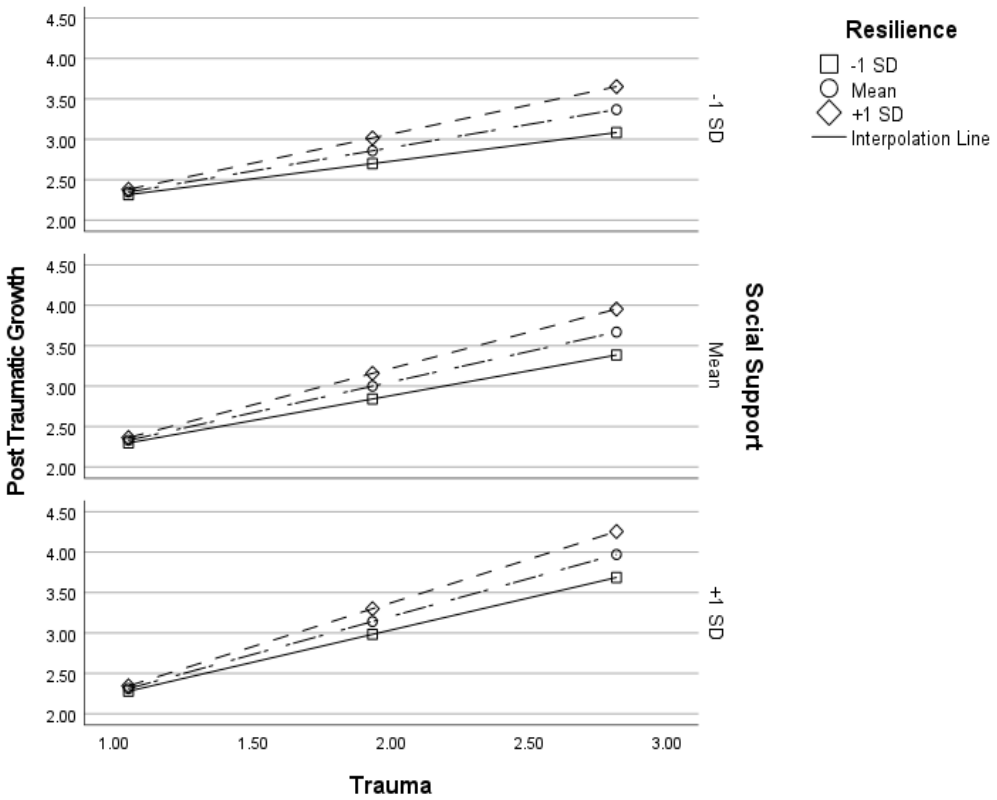

Figure 1. Association between trauma and posttraumatic growth at different levels of resilience and social support

Moderation analysis indicated that the relationship between trauma and PTG was significantly moderated by both resilience and social support, even after controlling for covariates. The moderation indicated that the relationship between trauma and PTG was significantly stronger in individuals with greater resilience [$F(1,360) = 5.69$, $p = .018$, $\Delta R^2 = .01$]. Also, the moderation indicated

that the relationship between trauma and PTG was significantly stronger in individuals with greater social support [F (1, 360) = 7.67, p = .006, ΔR^2 = .01]. In addition, there was a significant combined effect for the interaction of resilience and social support, such that the relationship between trauma and PTG is even stronger in individuals with both high levels of resilience and social support [F (2, 360) = 9.72, p < .001, ΔR^2 = .04]. See Table 1 and Figure 1 for details.

Discussion

The current study provides clear support for a positive association between COVID-19-related trauma and PTG. This result adds to the literature that, to our knowledge, has only once previously found such a relationship in the general U.S. population (Northfield & Johnston, 2022). And while the positive association between trauma and growth was evident, it is clear that not all people experienced that relationship equally. It is noteworthy that PTG was positively associated with both race (i.e., identifying as Black compared to White) and with having higher levels of spirituality. These relationships are consistent with previous research that found positive associations between PTG and both spirituality and belonging to a marginalized racial group (Feingold et al., 2022; Na et al., 2021, Northfield & Johnston, 2022; Wiley et al., 2022). Though one previous study (Northfield & Johnston, 2022) did find a relationship between PTG levels and participants' age and education levels, we did not find a relationship between PTG and age, gender, income, political leaning, or US region in our sample.

The primary goal of this research was to test the degree to which perceived social support and psychological resilience serve as moderators of the relationship between COVID-19-related trauma and PTG. We found strong support for both factors as moderators, where having stronger perceived social support or psychological resilience was associated with an increase in the degree to which trauma and growth were related. More so, there was an interaction such that those who had higher levels of both support and resilience had an even stronger relationship between trauma and PTG. The trauma caused by the COVID-19 pandemic was associated with a greater degree of existential growth, but much more so for those who felt supported by others and saw themselves as stronger and more resilient during the height of the pandemic. These moderators held even when accounting for the demographic factors that were found to covary with both trauma and PTG.

This research provides fresh evidence for the relationship between COVID-19-related trauma and PTG, especially in regard to the role of social support and resilience as moderators of that relationship. However, the present study did have limitations. As is the nature of all survey research, the findings are based on self-report and therefore are potentially influenced by positivity and hindsight bias. And while efforts were made to reach a representative sample of Americans, the data cannot perfectly replicate the full range of experiences of the pandemic. The final sample in the analysis was slightly more White, liberal, educated, and wealthy than the general public, and our findings may overrepresent their experiences. Finally, it must be explicitly stated that these findings are correlational in nature, and cannot be assumed to represent causal relationships. Our hypotheses were based on the existing literature, the majority of which is also based on correlational data. In addition, our findings tested only one potential model of the relationship between trauma, social support, resilience, and growth, and did not eliminate the possibility of other structured relationships between the variables.

Conclusions

The current findings support the idea that traumatic experiences such as the COVID-19 pandemic are associated with psychological growth, and that such growth may be bolstered by having higher levels of social support and resilience. It is likely that the roles of social support and resilience were especially pronounced during the COVID-19 pandemic given its isolating and prolonged nature. Healthcare providers may be well-advised to focus on their clients' needs to maintain and strengthen their levels of social support and resilience when facing challenges of a similar nature. Future studies are needed that focus specifically on intervention strategies built around improving perceived social support and psychological resilience to aid people's recovery from the pandemic. Given the depth and magnitude of the suffering endured by many, further understanding of how best to approach the trauma associated with COVID-19 remains a clear and necessary goal for psychological research and treatment.

Compliance with Ethical Standards

Disclosure of Potential Conflicts of Interest. The authors declare no conflicts of interest related to the research, authorship and/or publication of this article.

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Ethical Approval. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The treatment of human participants was in accordance with the ethical standards of the U.S. Office for Human Subjects Research Protections and with IRB approval (number: 45cfr46.104(d)(2i); date: 04/10/2023). No patient data was used in this research, nor was there a clinical trial of any kind. No material from other sources was used in this manuscript.

Informed Consent. Consent was obtained from all participants included in the study.

Data Sharing Statement. The data file for this study is available upon request.

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