

# The Role of Emotional Creativity and Self-Disclosure in Post-traumatic Growth Among Healthcare Workers After the COVID-19 Pandemic

Anwar Iqbal<sup>1</sup> Muhana Sofiati Utami<sup>1\*</sup>  
<sup>1</sup>Faculty of Psychology, Universitas Gadjah Mada

Submission 14 November 2023 Accepted 30 January 2024 Published 28 August 2024

**Abstract.** Previous studies have shown that healthcare workers experienced Post-Traumatic Growth (PTG) during the COVID-19 pandemic. Various factors, such as social support, coping strategies, and deliberate rumination, were also reported to positively influence healthcare workers PTG. This study examined the role of emotional creativity and self-disclosure in the PTG of healthcare workers handling COVID-19 patients. The study involved 186 healthcare workers recruited through convenience sampling. The Post-Traumatic Growth Inventory - Expanded (PTGI-X), Revised Self-Disclosure Scale (RSDS), and Emotional Creativity Inventory (ECI) were used to collect data in this study. Based on multiple regression analyses, the model consisting of emotional creativity and self-disclosure was able to predict PTG ( $F = 15.54; p < 0.001$ ). Partially, the results indicated that emotional creativity significantly predicted PTG ( $\beta = 0.337; 95\% CI = 0.198 - 0.477$ ), whereas self-disclosure did not ( $\beta = 0.112; 95\% CI = -0.027 - 0.251$ ). Additional analyses showed that healthcare professionals with more than 20 years of working experience had significantly higher PTG than those with 11 - 20 years of working experience. This study implies that flexibility in expressing emotions is a more preferred and impactful psychological resource in helping healthcare workers face similar traumatic events in the future.

**Keywords:** COVID-19 pandemic; emotional creativity; healthcare workers; post-traumatic growth; self-disclosure

The handling of the COVID-19 pandemic has had a profound impact on healthcare professionals. Extra efforts and adaptations have been made by healthcare workers, given that COVID-19 was an illness that the global medical community had never faced before (Muralidar et al., 2020). Concerns about contracting the virus, discomfort while wearing personal protective equipment, and discrimination and violence from the social environment are some of the other challenges faced by healthcare workers in the field (Munawar & Choudhry, 2020; Rosyanti & Hadi, 2020; Syambudi, 2021; Windarwati et al., 2021). Consequently, the psychological condition of healthcare workers deteriorated, with them exhibiting symptoms such as post-traumatic stress, depression, anxiety, stress (Si et al., 2020), trauma,

\*Address for correspondence: muhana@ugm.ac.id



Copyright ©2024 The Author(s). This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by-sa/4.0/>)

and emotional exhaustion (Chen et al., 2021).

The COVID-19 pandemic can be considered a traumatic experience for healthcare workers. Xiao et al. (2020) stated that an epidemic disease phenomenon can cause psychological trauma for the affected population: family members, healthcare professionals, and other first-line helpers. Healthcare workers, along with patients' families, directly witness individuals affected by the outbreak and provide assistance to survivors. Empirically, several research findings on healthcare workers indicate that managing the COVID-19 pandemic can be categorized as a traumatic experience, especially for healthcare workers who are directly tasked with treating and managing confirmed COVID-19 patients (Feingold et al., 2022; Foli et al., 2021; Kwaghe et al., 2021; Si et al., 2020). This is caused by the high and varied psychological distress experienced by these professionals during the COVID-19 pandemic, including stigmatization and social isolation from the surrounding community, as previously mentioned. Furthermore, the COVID-19 pandemic is not an event that occurs only at a single moment, like an accident that is also considered a traumatic event. Instead, a pandemic occurs simultaneously across layers of society worldwide and over a relatively long period.

Despite this, the negative psychological impact of traumatic events does not always harm healthcare professionals. In fact, traumatic experiences can become a catalyst for individuals to undergo positive changes. This change is referred to by scholars as Post-Traumatic Growth (PTG). PTG is defined as a positive psychological change that occurs as a result of an individual's struggle to cope with a traumatic experience (Tedeschi et al., 2018; Wagner et al., 2016). It encompasses three general areas of an individual, namely self-perception, life philosophy, and interpersonal relationships. They manifest in five dimensions: new possibilities, appreciation of life, personal strength, relating with others, and spiritual and existential change. New possibilities refer to the discovery of new opportunities in an individual's life that can be explored further. Appreciation of life represents gratitude for one's life journey. Personal strength is a situation when an individual finds and recognizes their strengths and advantages. Relating with others refers to the improvement in the quality of one's relationships with others. Spiritual and existential change is a change and improvement of an individual's existential and spiritual aspects (Tedeschi et al., 2017; Tedeschi et al., 2018). From a temporal perspective, PTG is dynamic, meaning an individual can experience PTG immediately after the traumatic event or it may take longer, even more than 12 months (Tedeschi et al., 2018).

Empirically, several studies have found that healthcare workers on the front lines of the COVID-19 pandemic reported experiencing significant PTG (Chen et al., 2021; Cui et al., 2021; Feingold et al., 2022; X. Liu et al., 2021). These findings are a positive indication for healthcare workers in coping with the traumatic COVID-19 pandemic, especially psychologically, considering that PTG can contribute to life satisfaction, happiness, psychological well-being, and physical well-being (Manning-Jones et al., 2015).

One consequence of traumatic events is the threat (emotional pressure) to individuals (Tedeschi et al., 2018). Agitation, caused by traumatic events to an individual's principles, beliefs, and worldview, triggers negative emotional reactions. Therefore, good emotional coping skills against emotional pressure caused by trauma are important in promoting adaptive post-trauma adjustment

(Tedeschi et al., 2018). Effective emotional management includes expressing emotions appropriately in every situation and condition, referred to by scholars as emotional creativity.

Emotional creativity is a personality trait associated with cognitive abilities to represent originality and accuracy in emotional expression (Ajam et al., 2016; Alzoubi et al., 2021). According to Averill (Kuka et al., 2020), emotional creativity consists of four aspects: preparedness, novelty, effectiveness, and authenticity. Preparedness reflects a thorough understanding of one's own emotions or others and the desire to learn about them more deeply. Novelty refers to the ability to express unique and uncommon emotions. Effectiveness is the accuracy and usefulness of the expressed emotions, both for the individual and the group. Authenticity represents the originality of emotions produced by an individual, without fabrication. These four aspects are similar to the components found in the construct of cognitive creativity, which is also an important component in the post-traumatic growth theory (Amabile et al., 2018; Sadler-Smith, 2015; Tedeschi et al., 2018; Valgeirsdottir & Onarheim, 2017).

In certain contexts, emotional creativity is not considered the same as emotional intelligence. Emotional intelligence is a convergent (focused) ability, defined as the ability to recognize, analyze, and determine which emotion is appropriate to use as a resource for a problem (Selvi & Aiswarya, 2022). On the other hand, emotional creativity is a divergent (diversified) ability, emphasizing accuracy and originality in emotional expression, even if the expressed emotions may not be common or are a combination of several emotions (Naa Anyimah Botchway, 2022). Both emotional intelligence and emotional creativity essentially reflect good emotional skills by an individual in coping with emotional pressure caused by trauma. The difference lies in that emotional intelligence describes the ability to regulate emotions that arise from traumatic experiences (Sadeghpour et al., 2021; Tuck & Patlamazoglou, 2019), while emotional creativity describes flexibility and the absence of constraints for an individual in expressing emotions when faced with unusual or novel situations, such as traumatic experiences (Orkibi & Ram-Vlasov, 2019).

Orkibi and Ram-Vlasov (2019) found that emotional creativity contributes to post-traumatic growth by acting as a mediator between exposure to traumatic events and post-traumatic growth. According to Damian and Simonton (2015), traumatic events can cause tension and imbalance in an individual's core beliefs and attitude toward their worldview. This then requires individuals to adaptively and creatively adjust themselves to find solutions, including emotionally. Emotionally creative individuals tend to utilize past emotional experiences to face current emotional experiences (Kuka et al., 2020). Averill as cited in Orkibi and Ram-Vlasov (2019) stated that individuals with high levels of emotional creativity, especially in aspects of effectiveness/authenticity, tend to perceive that they have gained benefits and advantages from stressful experiences. This perception is considered consistent with the concept of post-traumatic growth.

In addition to emotional creativity, self-disclosure is another important factor that can play a role in post-traumatic growth. Self-disclosure is defined as an individual's effort to share personal information with others that is typically considered private (B. Kim et al., 2015; Leite & Baptista, 2022; Utz, 2015). Individuals who share information about themselves generally aim to fulfill their social needs by receiving support from their social environment, thus enabling them to be empowered

(Candel & Turliuc, 2021). This also applies in the context of traumatic experiences.

Self-disclosure in the context of expressing traumatic experiences is a crucial component in post-traumatic growth (Tedeschi et al., 2018). Sharing traumatic experiences can be done in various ways, both verbally (by speaking directly with others) and non-verbally (through drawing, writing, and other means) (Goldner et al., 2021; Zheng et al., 2019). Besides being part of the healing process from trauma Frattarolli, as cited in Marriott et al. (2016), expressing traumatic experiences can directly become an alternative for addressing the problems faced or at least reduce the emotional burden of trauma survivors (B. Kim et al., 2015). Difficulties or reluctance to express traumatic experiences by trauma survivors can result in the occurrence of post-traumatic stress disorder and/or more severe mental conditions (Yardeni et al., 2024). Dong et al. (2015) added that individuals who are able and willing to share their traumatic experiences have a greater chance of experiencing post-traumatic growth compared to individuals who do not share their traumatic experiences. This is because sharing traumatic experiences can become a means to receiving support from the surrounding environment through positive affirmation and validation of their emotions (Lee et al., 2018; Yeo & Park, 2020). This can encourage cognitive processes to find more positive meanings, thus helping the individual grow from the crisis caused by the traumatic experience (Y.-S. Kim & Kang, 2021; Ryu & Suh, 2022).

Previous literature has mentioned that emotional creativity and self-disclosure, especially in the context of sharing traumatic experiences, play an important role in predicting the level of post-traumatic growth. Zhai et al. (2021) studied the role of emotional creativity on post-traumatic growth in the context of COVID-19 survivors. The findings showed that emotional creativity contributes to post-traumatic growth mediated by social support. Vessal et al. (2022) studied the role of emotional creativity on post-traumatic growth among cancer survivors. The findings from this study showed that emotional creativity is a positive factor contributing to post-traumatic growth for cancer survivors navigating through the traumatic pandemic period. Orkibi and Ram-Vlasov (2019) conducted a study on the role of emotional creativity and post-traumatic growth among adult Israelis. The study yielded findings that emotional creativity contributes positively to an increase in post-traumatic growth. A study conducted by Ko et al. (2020) on a sample of firefighters found that self-disclosure directly plays a positive role in increasing post-traumatic growth. A study conducted by Ryu and Suh (2022) on 310 South Korean adults who experienced trauma found that self-disclosure contributes to post-traumatic growth mediated by deliberate rumination, positive social responses, and perceptions of life's meaning.

Despite existing literature, studies examining the role of emotional creativity and self-disclosure in post-traumatic growth among healthcare professionals, in the post-COVID-19 pandemic, are still considered worthy of further exploration. Research on the role of emotional creativity in post-traumatic growth among healthcare professionals is scarce. Additionally, the specific role of self-disclosure in post-traumatic growth in previous studies vary, making it intriguing to understand how self-disclosure contributes to post-traumatic growth, particularly in the context of healthcare professionals directly involved in managing the COVID-19 pandemic.

The aim of this research was to examine the role of emotional creativity and self-disclosure

on post-traumatic growth among healthcare professionals who managed the COVID-19 pandemic. The hypothesis proposed in this research was that emotional creativity and self-disclosure contribute to higher levels of post-traumatic growth among healthcare professionals involved in COVID-19 management.

## Method

### *Setting and Research Procedure*

This research obtained approval and passed the ethical review from the Faculty of Psychology at Universitas Gadjah Mada with clearance number 8278/UNI/F.Psi.1.3/SD/PT.01.04.2022. This research employed a quantitative non-experimental approach. Participant data was collected through an online questionnaire on <https://www.surveymonkey.com/>. The online questionnaire includes an explanation of the study, demographic variables, and psychological scales to measure the variables under study. Before filling out the questionnaire, participants were asked to sign an informed consent form attached to the online questionnaire to indicate their willingness to take part in the study. As a mitigation step against potential harm to participants, researchers told participants via informed consent that they could withdraw from the research process at any time if they felt any discomfort due to trauma or similar issues during questionnaire completion. Additionally, researchers also invited participants to contact them for further assistance from mental health professionals if needed.

The participants in this research were healthcare professionals who met the following inclusion criteria: (1) directly treated and interacted with COVID-19 patients, (2) professionally working as healthcare professionals since at least 2019, and (3) confirmed to have experienced trauma due to managing the COVID-19 pandemic. Sampling was conducted non-randomly (non-probability sampling), specifically convenience sampling, based on availability and voluntary participation (Etikan, 2016). The recruitment and distribution of questionnaires for participants was done online and openly through social media channels and healthcare professional networks. Additionally, participant recruitment was also conducted formally through permits at several COVID-19 referral hospitals in the Yogyakarta Special Region and Central Java. In practice, researchers coordinated with hospital management to gather a number of healthcare professionals who met the predetermined criteria while also assisting researchers in monitoring the questionnaire completion process.

**Table 1**

*Participant Demographics (N = 186)*

Demographic Characteristics	Category	Frequency (N)	Percentage (%)
Gender	Male	44	23.7
	Female	142	76.3
Education	Diploma	123	66.1
	Bachelor's or equivalent	58	31.2
	Postgraduate	5	2.7

**Table 1 (Continued)***Participant Demographics (N = 186)*

Demographic Characteristics	Category	Frequency (N)	Percentage (%)
Profession	Nurse	172	92.5
	Doctor	5	2.7
	Midwife	6	3.2
	Lab technician	3	1.6
Age (M: 37,3)	23-32 years old	63	33.9
	33-41 years old	61	32.8
	> 41 years old	62	33.3
Working Years (M: 16 years)	> 20 years	60	32.3
	11-20 years	71	38.2
	< 10 years	55	29.6

M: Mean

Initially, 236 healthcare professionals completed the online questionnaire. However, 50 participants were confirmed not to have experienced post-COVID-19 pandemic trauma. Consequently, data from these 50 participants were eliminated, and data from the remaining 186 participants were included in this study. The participants involved were predominantly female ( $N = 142, 76.3\%$ ), had a diploma-level education ( $N = 123, 66.1\%$ ), and were nurses ( $N = 172, 92.5\%$ ). The average age of the participants was 37.3 years old, while the average length of service was 16 years. A detailed description of the participants can be seen in Table 1.

#### *Measurement*

To assess whether participants experienced trauma due to managing the COVID-19 pandemic, the researchers used a questionnaire replicated from Okoli et al. (2021) study. The questionnaire consisted of a single short question: Based on your experience treating COVID-19 patients, which of the following events (moments) caused you to experience high levels of stress that led to trauma? Participants were asked to select one or more options among the following alternatives: (1) using Personal Protective Equipment (PPE) whenever they were treating patients, (2) handling a large number of COVID-19 patients each day while still being vigilant about their own health and safety, (3) worrying about contamination or becoming a carrier of the COVID-19 virus, (4) treating COVID-19 patients with insufficient healthcare staff, (5) treating COVID-19 patients with limited medical equipment (e.g., oxygen tanks and ventilators), (6) dealing with critically ill or dying COVID-19 patients, (7) facing discrimination or unpleasant treatment from society, (8) Other as an option to accommodate other forms of traumatic experiences that may not have been considered as traumatic moments, and option (9) None of the events caused me to experience high levels of stress that led to trauma. These options are based on results from several studies on stressors and psychological impacts caused by COVID-19 on healthcare professionals in Indonesia (Hanggoro et al., 2020; Rosyanti & Hadi, 2020; Windarwati et al., 2021).

Participants were categorized as having experienced trauma due to the pandemic if they selected at least one of the traumatic moments or chose Other. Conversely, participants were considered as not having experienced trauma due to the pandemic if they selected None of the events caused me to experience high levels of stress that led to trauma.

Post-traumatic growth was measured using the Post-traumatic Growth Inventory-Expanded (PTGI-X), developed by Tedeschi et al. (2017). This scale consists of 25 statements representing five dimensions of post-traumatic growth, i.e., appreciation of life, new possibilities, personal strength, relating with others, and spiritual and existential changes. Some examples of items on this scale include: Working with the risk of losing my life while treating COVID-19 patients made me realize how valuable my life is and After successfully overcoming the high pressure of work during the pandemic, I became more confident in myself.

Responses on this scale range from 0 (I have not experienced any change in this regard) to 5 (I have experienced a very significant change in this regard). The total score on this scale ranges from 0 - 150, in which the higher the total score, the higher the level of post-traumatic growth. This scale has been adapted by Rahmaningsih and Retnowati (2019) into Indonesian and reported to have satisfactory psychometric properties. Researchers then modified the scale to fit the context of this study, which was healthcare professionals treating COVID-19 patients. Based on internal validity testing involving assessments from eight academics and clinical psychologists, this scale has an Aiken V score ranging from 0.72 - 0.97. Testing this scale on 33 healthcare professionals resulted in a Cronbach's  $\alpha$  score of 0.947. In this study, a Cronbach's  $\alpha$  score of 0.944 was obtained and the total item correlation ranged from 0.434 - 0.750, indicating that the scale is considered reliable (Taber, 2018).

Emotional creativity was measured using the Emotional Creativity Inventory (ECI), developed by Averill (Zhai et al., 2021). This scale consists of 25 items representing three aspects: preparedness, novelty, and effectiveness/authenticity. Some examples of items on this scale include: I think about and try to understand my emotional reactions and The emotions I feel help me achieve my life goals.

The total score on this scale ranges from 1 - 125, in which the higher the total score, the higher the emotional creativity level. This scale was adapted by researchers into Indonesian through translation by a language professional and expert judgment and then tested on 30 - 40 participants. Based on internal validity testing involving assessments from eight academic and clinical psychology practitioners, this scale has been reported to have an Aiken V score ranging from 0.75 - 0.93. Testing this scale on 33 healthcare professionals resulted in a Cronbach's  $\alpha$  reliability score of 0.905. In this study, the Emotional Creativity Inventory (ECI) showed a total item correlation ranging from 0.353 - 0.632 and a Cronbach's  $\alpha$  reliability score of 0.902, indicating that the scale is considered reliable in the context of this study's participants.

Self-disclosure is measured using the Revised Self-disclosure Scale (RSDS), which consists of 15 items representing five aspects of self-disclosure: intent, amount, valency, depth, and honesty. This scale has been adapted by Gamayanti et al. (2018) into Indonesian and reported to have a Cronbach's  $\alpha$  reliability score of 0.89. The scale was then modified by researchers to fit the context of this study, which was the expression of traumatic experiences by healthcare professionals treating COVID-19

patients. Some examples of items on this scale include: I am willing to share how tough my work is in treating COVID-19 patients even without being asked and I share my anxiety regarding my experience in treating COVID-19 patients with others. The total score on this scale ranges from 1 - 60, in which the higher the total score, the higher the tendency for self-disclosure. Based on expert assessment, this scale has an Aiken V score ranging from 0.69 - 1. Testing this scale on 33 healthcare professionals resulted in a Cronbach's  $\alpha$  score of 0.924. In this study, the scale showed a Cronbach's  $\alpha$  score of 0.919 and a total item correlation ranging from 0.409 - 0.720.

#### *Data Analysis*

The data from this study were analyzed statistically using Jamovi 2.3.21.0. Descriptive analysis was used to determine the demographic characteristics of the participants and the profile of the variables studied. The correlation between research variables was analyzed using Pearson's correlation analysis. Assumption tests were performed before hypothesis testing, which included normality tests, linearity tests, multicollinearity tests, and heteroscedasticity tests (Hayes, 2018; Nayebi, 2020; Shrestha, 2020). Multiple linear regression analysis was used to answer the research hypothesis. Multiple linear regression intends to determine the role of two or more predictor variables in relation to a dependent variable in research (Hayes, 2018). The statistical significance level ( $p$ -value) was set at 0.05.

## Results

#### *Description of Data and Correlation Between Research Variables*

Table 2 indicates that both emotional creativity and self-disclosure have a significant positive correlation with post-traumatic growth, each with a value of 0.365 ( $p < 0.001$ ) and 0.196 ( $p < 0.01$ ), respectively.

**Table 2**

*Data of Research Variables (N = 186)*

Variable	Mean (SD)	Min	Max	1	2
Post-traumatic growth	88.0 (16.32)	35	125	-	-
Emotional creativity	80.4 (12.54)	29	125	0.365***	-
Self-disclosure	41.5 (6.67)	18	60	0.196**	0.247***

\*\*\*)  $p < 0.001$ ; \*\*)  $p < 0.01$ ; \*)  $p < 0.05$

Related to post-traumatic growth, the average score for each item on the Post-Traumatic Growth Inventory was 3.52 ( $SD = 0.65$ ). Based on the scale range of 0–5, this indicates that the level of post-traumatic growth among participants is at a moderate level (a score of 3 on the scale represents experiencing quite a change). The item Being assigned to risk one's life while treating COVID-19 patients made me realize how valuable my life is is the item with the highest average value ( $M = 3.95$ ;  $SD = 0.96$ ). Based on the five dimensions of post-traumatic growth, related to others is the dimension with the highest average value, namely ( $M = 23.6$ ;  $SD = 5.02$ ), while appreciation of life is the dimension



with the lowest average value ( $M = 10.7$ ;  $SD = 2.50$ ). Detailed information regarding the results for each dimension of post-traumatic growth can be seen in Table 3.

**Table 3**

*Dimensions of Post-traumatic Growth (N = 186)*

	AL	NP	PS	RwO	SEC
Mean (SD)	10.7 (2.50)	17.5 (3.84)	14.3 (2.78)	23.6 (5.02)	22.0 (4.30)
Minimum	3	6	4	9	7
Maximum	15	25	20	35	30

\*)AL = appreciation of life; NP = new possibilities; PS = personal strength; RwO = relating with others; SEC = spiritual and existential changes

#### *Assumptions Testing*

The results of the normality analysis using the Kolmogorov-Smirnov test indicated that the residuals of post-traumatic growth, emotional creativity, and self-disclosure are normally distributed ( $p = 0.466$ ;  $p > 0.05$ ). The results of the linearity test showed that emotional creativity and self-disclosure, as independent variables, have linearity scores of 28.505 ( $p = 0.00$ ;  $p < 0.05$ ) and 8.089 ( $p = 0.005$ ;  $p < 0.05$ ), respectively. Therefore, emotional creativity and self-disclosure have a linear relationship with post-traumatic growth. The results of the multicollinearity test indicate that both predictor variables do not correlate with each other, as shown by the tolerance value of each predictor variable being 0.939 (over 0) and the Variance Inflation Factor (VIF) score of each predictor variable being 1.07 (VIF  $< 5.0$ ) (Nayebi, 2020; Shrestha, 2020). The results of the heteroscedasticity test, with a  $p$ -value from the Breusch-Pagan test of 0.138 ( $p > 0.05$ ), indicated that the assumption of unequal variances or the problem of heteroscedasticity is not proven.

#### *Hypothesis Test*

Based on the results of multiple linear regression analysis, it was found that emotional creativity and self-disclosure have a significant positive role in predicting post-traumatic growth ( $F(2, 183) = 15.54$ ;  $p < 0.001$ ). This finding indicates that the model including emotional creativity and self-disclosure is more effective in explaining the variability of post-traumatic growth compared to a model without predictors. The  $R^2$  score was 0.145, indicating that emotional creativity and self-disclosure in this model can explain the variance in post-traumatic growth by 14.5%, while the remaining 85.5% is explained by other variables not studied in this research. After analyzing each predictor, it was found that emotional creativity has a more significant role in post-traumatic growth ( $\beta = 0.337$ ,  $t = 4.78$ ,  $p < 0.001$ , 95% CI [0.198; 0.477]) compared to self-disclosure ( $\beta = 0.112$ ,  $t = 1.59$ ,  $p = 0.113$ , 95% CI [-0.027; 0.251]). Self-disclosure did not have a significant role in post-traumatic growth in this model (see Table 4).

**Table 4***Results of Multiple Linear Regression Analysis (N = 186)*

	<i>b</i>	<i>t</i>	$\beta$	95% CI	<i>p</i>	<i>R</i> <sup>2</sup>
Model 1						0.133***
Post-traumatic growth (Y)	49.768	6.85				
Emotional creativity (X <sup>1</sup> )	0.475	5.32	0.365	0.230; 0.501	< 0.001***	
Model 2						0.145***
Post-traumatic growth (Y)	41.275	4.59				
Emotional creativity (X <sup>1</sup> )	0.439	4.78	0.337	0.198; 0.477	< 0.001***	
Self-disclosure (X <sup>2</sup> )	0.275	1.59	0.112	-0.027; 0.251	0.113	

\*\*\*)  $p < 0,001$ ; \*\*)  $p < 0,01$ ; \*)  $p < 0,05$ ; *b* = unstandardized beta;  $\beta$  = standardized beta

#### *Additional Analysis*

An analysis of variance (one-way ANOVA) was conducted to compare the impact of three categories of work duration on post-traumatic growth. Based on the results of the one-way ANOVA, a significant difference in the average scores of post-traumatic growth was found between at least two groups of working years ( $F(2, 183) = 3.63$  ( $p = 0.028$ ;  $p < 0.05$ )). Based on the results of the Tukey post-hoc test, a significant difference in post-traumatic growth was found between professional groups who had worked for more than 20 years and 11 - 20 years ( $p = 0.027$ ). No significant difference in post-traumatic growth was found between professional groups who had been working for more than 20 years and less than 10 years ( $p = 0.759$ ), or between 11 - 20 years and less than 10 years ( $p = 0.172$ ).

## **Discussion**

### *Research Findings*

This study indicates that, in general, participants experienced a significant positive change after undergoing traumatic events when managing the COVID-19 pandemic. This finding aligns with previous studies involving healthcare workers in China, England, and the United States (Barnicot et al., 2023; Chen et al., 2021; Feingold et al., 2022). The findings suggest that the majority of participants underwent positive changes and re-evaluated their values and life principles, leading to the discovery of life's meaning from the traumatic experience and the pressure faced during patient care and the COVID-19 pandemic (Dong et al., 2015; Tedeschi et al., 2017). Specifically, relating with others is the highest-scoring dimension of all post-traumatic growth dimensions. The item Caring for and treating COVID-19 patients has made me feel more compassionate and caring towards others had the highest average score among all items representing this dimension. This is considered relevant to the context of healthcare professionals' primary task, which is to assist those in need of healthcare. A possible explanation is compassion as one of the main principles upheld by healthcare professionals in their service to patients and their spirit to continue contributing to society at large, despite less-than-ideal conditions due to the COVID-19 pandemic (Mohan et al., 2021).

The study found that a combination of emotional creativity and self-disclosure can explain 14.5% of the variance in post-traumatic growth. The standardized beta ( $\beta$ ) value for emotional creativity being larger indicates a greater contribution from emotional creativity than from self-disclosure toward post-traumatic growth in this study's context. This means that the ability to express and feel emotions well plays a more significant role in post-traumatic growth than sharing traumatic experiences (Hanley et al., 2017). These findings also indicate a possibility that the numerous tasks and professional responsibilities may cause healthcare professionals to maximize their internal resources related to emotions for growth from trauma experienced rather than seeking support from others who may be obtained by expressing traumatic experiences (Ryu & Suh, 2022; Tedeschi et al., 2018).

The contribution of emotional creativity to Post Traumatic Growth (PTG) may occur through the relationship between emotions and creativity via neurobiological mechanisms. According to Yeh et al. (2019), emotions play a crucial role in triggering cognitive processes in individuals. Individuals with high emotional creativity are likely to experience a variety of complex emotion combinations. The arousal of these emotions eventually leads to the release of hormones, e.g., dopamine, norepinephrine, and serotonin, which can stimulate and enhance cognitive processes related to the formation of new ideas and understanding, which are indicators of PTG (Gu et al., 2018; Okon-Singer et al., 2015; Tyng et al., 2017).

Additionally, healthcare professionals with high emotional creativity have a greater chance of growing from trauma. This may be due to their ability to find effective coping strategies, especially emotionally, in facing pressure. Effective coping strategies are also considered an important factor for individuals in adapting to post-trauma adjustments (Nik Jaafar et al., 2021; Platte et al., 2022; Wan et al., 2022). Ling et al. (2017) found that the preparedness aspect of emotional creativity correlates with emotion-focused coping, while the effectiveness aspect correlates with problem-focused coping. This means that attitudes towards emotions and previous emotional experiences (trauma) are used by healthcare professionals as resources for managing stressful situations during the COVID-19 pandemic. Moreover, an appropriate emotional response in dealing with specific traumatic situations is considered helpful for healthcare professionals in effectively addressing problems, both individually and ones that involve others, such as colleagues or patients (Rey et al., 2016).

Further clarification regarding the role of coping strategies in mediating the relationship between emotional creativity and PTG in the context of healthcare professionals or the COVID-19 pandemic requires additional clarification through further research.

Another finding in this study indicates that self-disclosure does not contribute to PTG. This may be due to the measurement of self-disclosure in this study not identifying to whom the expression of experiences is conveyed and how others respond to such expressions (Kimbly et al., 2023; Tedeschi et al., 2018). A study conducted by Freedle and Oliveira (2021), which used the Distress Disclosure Index (DDI) as a self-disclosure instrument, also found that variance in PTG explained by positive social environment reactions to trauma survivors is greater than variance explained solely by self-disclosure. Furthermore, some studies suggest that variables such as deliberate rumination and meaning-making mediate the role of self-disclosure in PTG (T. Liu, 2022; Matos et al., 2021; Tekie,

2018). These arguments can explain that self-disclosure may only function as a medium for catharsis and obtaining the social support needed by trauma survivors, not as a significant direct contributor to post-traumatic growth (Akbar, 2014; Buselli et al., 2021; O'Donovan & Burke, 2022; Tedeschi et al., 2018).

The intense work hours and the increased workload in managing the COVID-19 pandemic may be the reason why the role of self-disclosure is not significant to post-traumatic growth in this study. The responsibility of healthcare workers to remain vigilant in treating COVID-19 patients over a long period may limit their opportunity to express their thoughts and grievances (Purwaningsih & Darma, 2021; Widiyana, 2021). Moreover, considering the strict contact restrictions (isolation) of healthcare workers with others around them, including their own families at home, their chances to share traumatic experiences might be limited.

Additional analysis results indicate that participants with more than 20 years of service reported higher post-traumatic growth scores compared to participants with 11-20 years of service. This may be due to the greater experience and higher critical thinking abilities possessed by more senior healthcare workers, as found in previous studies (Cui et al., 2021; Zuriguel-Pérez et al., 2019). When faced with the unfavorable and rapidly changing situation of the COVID-19 pandemic, healthcare workers with more experience tend to be more capable of adjusting effectively, including perceiving adverse situations as an opportunity for growth and development (Park & Park, 2019).

Based on the findings obtained, this study has limitations and weaknesses. The main weakness lies in the method of determining whether a healthcare worker experienced traumatic situations, which involves selecting moments deemed to be highly stressful. This approach may lack validity, potentially leading to biased claims by participants about their traumatic experiences. The researcher opted for this method to shorten the study's participation time, given the limited availability of time and space for health workers to engage in the research. Additionally, Tedeschi et al. (2018) defined "*trauma*" within the post-traumatic growth theory as an event that is highly stressful and life-altering. The focus on the perception of severity and stress (stressfulness) from the event serves as an indicator for classifying it as a traumatic event for an individual, rather than relying on the presence or absence of trauma symptoms or Post-Traumatic Stress Disorder (PTSD) symptoms. Consequently, the researcher established the trauma confirmation steps as previously described, not by measuring trauma or PTSD symptoms. Furthermore, the use of convenience sampling, a non-probability sampling technique, may restrict the generalizability of this study's results. Althubaiti (2022) noted that probability sampling offers greater generalizability than non-probability sampling. Nonetheless, this sampling method was used due to the researcher's limited resources, such as funding constraints and challenges in accessing participants. The Core Beliefs Inventory Scale, developed by Cann et al. (2010). (Taku et al., 2015), could serve as an alternative psychometrically robust tool for confirming trauma. This scale aligns with the definition of trauma in post-traumatic growth contexts and measures disruptions in core beliefs, which are the primary impacts of traumatic events and initial triggers for post-traumatic growth (Dominick, 2022; Hanley et al., 2017; Tedeschi et al., 2018). A disturbed core belief due to an event suggests that a traumatic experience has occurred, prompting individuals to reassess their worldview (Taku

et al., 2015; Tedeschi et al., 2018). The study's findings may be limited to health workers who have treated COVID-19 patients directly. However, even those not directly treating COVID-19 patients may experience trauma caused by the pandemic, which is globally recognized as a traumatic event due to its widespread outbreak and significant impact on health and other facets of human life (Chen et al., 2021; Xiao et al., 2020).

## Conclusion

Based on the findings, it can be concluded that emotional creativity and self-disclosure about traumatic experiences both contribute to post-traumatic growth among health workers who have treated COVID-19 patients. Emotional creativity appears to have a greater impact than self-disclosure in predicting post-traumatic growth, with self-disclosure being found not to significantly contribute to high levels of post-traumatic growth. Additionally, the duration of service among health workers is also considered a factor in predicting post-traumatic growth

### *Recommendation*

This finding suggests that the ability to express emotions flexibly, effectively, and originally is crucial for empowering health workers when facing similar traumatic experiences in the future. The results of this study found that health workers should embrace and accept all emotions that arise from traumatic stress, thereby enhancing the potential for individuals to derive a more positive meaning from life. Hospital management and other health facilities are encouraged to provide resources that foster emotional creativity among health workers, e.g., through training or other supportive measures.

Further research on self-disclosure as a medium for post-traumatic intervention should aim to elicit a positive response from trauma survivors by validating their emotions. This approach not only improves the intervention's effectiveness but also promotes growth opportunities for survivors following traumatic experiences.

It is also recommended that future studies on trauma and post-traumatic growth employ the Core Beliefs Inventory (CBI) measurement tool (Cann et al., 2010) to accurately identify and confirm trauma in participants resulting from specific events deemed traumatic. Additionally, further investigations into post-traumatic growth among health workers are advised to provide a more holistic understanding of the COVID-19 pandemic's impact on this group.

## Declaration

### *Acknowledgment*

The author wishes to extend heartfelt thanks to all contributors to this research, particularly to the hospital management and health workers at Bethesda Hospital Yogyakarta, Panti Rapih Hospital Yogyakarta, Dr. Kariadi General Hospital Semarang, and Dr. Sardjito General Hospital Yogyakarta for their invaluable assistance and enthusiastic involvement in this study.

*Author's contribution*

AI played a pivotal role in conceptualizing the study, data gathering, analysis, and drafting the report. MSU provided oversight throughout the research process, offered critical reviews, and refined the manuscript.

*Conflict of Interest*

The author declares that there is no conflict of interest in the preparation of this manuscript.

*Orcid ID*

Anwar Iqbal  <https://orcid.org/0009-0004-2877-008X>

Muhana Sofiati Utami  <https://orcid.org/0000-0001-9032-1606>

## References

- Ajam, A. A., Badnava, S., Abdellahi, M., & Momeni-mahmouei, H. (2016). The relation between emotional creativity and academic enthusiasm in public health students in gonabad university of medical sciences. *Research in Medical Education*, 8(4), 11–18. <https://doi.org/10.18869/acadpub.rme.8.4.11>
- Akbar, Z. (2014). Post-traumatic growth, coping, and social support among disaster survivors in the province of yogyakarta, indonesia. In *Psychology applications & developments: Advances in psychology and psychological trends series*. InScience Press.
- Althubaiti, A. (2022). Sample size determination: A practical guide for health researchers. *Journal of General and Family Medicine*, 24(2), 72–78. <https://doi.org/10.1002/jgf2.600>
- Alzoubi, A. M. A., Al. Qudah, M. F., Albursan, I. S., Bakhiet, S. F. A., & Alfnan, A. A. (2021). The predictive ability of emotional creativity in creative performance among university students. *SAGE Open*, 11(2), 21582440211008876. <https://doi.org/10.1177/21582440211008876>
- Amabile, T. M., Amabile, T. M., Collins, M. A., Conti, R., Phillips, E., Picariello, M., Ruscio, J., & Whitney, D. (2018). *Creativity in context: Update to the social psychology of creativity* (1st ed.). Routledge. <https://doi.org/10.4324/9780429501234>
- Barnicot, K., McCabe, R., Bogosian, A., Papadopoulos, R., Crawford, M., Aitken, P., Christensen, T., Wilson, J., Teague, B., Rana, R., Willis, D., Barclay, R., Chung, A., & Rohricht, F. (2023). Predictors of post-traumatic growth in a sample of united kingdom mental and community healthcare workers during the covid-19 pandemic. *International Journal of Environmental Research and Public Health*, 20(4), 3539. <https://doi.org/10.3390/ijerph20043539>
- Buselli, R., Corsi, M., Veltri, A., Baldanzi, S., Chiumiento, M., Lupo, E. D., Marino, R., Necciari, G., Caldi, F., Foddis, R., Guglielmi, G., & Cristaudo, A. (2021). Mental health of Health Care Workers (HCWs): a review of organizational interventions put in place by local institutions to cope with new psychosocial challenges resulting from COVID-19. *Psychiatry Research*, 299, 113847. <https://doi.org/10.1016/j.psychres.2021.113847>

- Candel, O. S., & Turliuc, M. N. (2021). The role of relational entitlement, self-disclosure and perceived partner responsiveness in predicting couple satisfaction: A daily-diary study. *Frontiers in Psychology, 12*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.609232>
- Cann, A., Calhoun, L., Tedeschi, R., Kilmer, R., Gil-Rivas, V., Vishnevsky, T., & Danhauer, S. (2010). The core beliefs inventory: A brief measure of disruption in the assumptive world. *Anxiety, stress, and coping, 23*(1), 19–34. <https://doi.org/10.1080/10615800802573013>
- Chen, R., Sun, C., Chen, J.-J., Jen, H.-J., Kang, X. L., Kao, C.-C., & Chou, K.-R. (2021). A large-scale survey on trauma, burnout, and posttraumatic growth among nurses during the covid-19 pandemic. *Int J Ment Health Nurs, 30*(1), 102–116. <https://doi.org/10.1111/inm.12796>
- Cui, P. p., Wang, P. p., Wang, K., Ping, Z., Wang, P., & Chen, C. (2021). Post-traumatic growth and influencing factors among frontline nurses fighting against covid-19. *78*(2), 129–135. <https://doi.org/10.1136/oemed-2020-106540>
- Damian, R. I., & Simonton, D. K. (2015). Psychopathology, adversity, and creativity: Diversifying experiences in the development of eminent african americans. *Journal of Personality and Social Psychology, 108*, 623–636. <https://doi.org/10.1037/pspi0000011>
- Dominick, W. (2022). Changes in posttraumatic growth, core belief disruption, and social support over the first year of the covid-19 pandemic. *Front Psychol, 13*, 1019273. <https://doi.org/10.3389/fpsyg.2022.1019273>
- Dong, C., Gong, S., Jiang, L., Deng, G., & Liu, X. (2015). Posttraumatic growth within the first three months after accidental injury in china: The role of self-disclosure, cognitive processing, and psychosocial resources. *Psychology, Health & Medicine, 20*(2), 154–164. <https://doi.org/10.1080/13548506.2014.913795>
- Etikan, I. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*, 1. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Feingold, J. H., Hurtado, A., Feder, A., Peccoralo, L., Southwick, S. M., Ripp, J., & Pietrzak, R. H. (2022). Posttraumatic growth among health care workers on the frontlines of the covid-19 pandemic. *J Affect Disord, 296*, 35–40. <https://doi.org/10.1016/j.jad.2021.09.032>
- Foli, K. J., Forster, A., Cheng, C., Zhang, L., & Chiu, Y.-C. (2021). Voices from the COVID-19 frontline: Nurses trauma and coping. *Journal of Advanced Nursing, 77*(9), 3853–3866. <https://doi.org/10.1111/jan.14988>
- Freedle, A., & Oliveira, E. (2021). The relationship between disclosure, social reactions, rumination and posttraumatic growth following miscarriage. *Traumatology, 28*(4), 445–457. <https://doi.org/10.1037/trm0000360>
- Gamayanti, W., Mahardianisa, M., & Syaifei, I. (2018). Self-disclosure dan tingkat stres pada mahasiswa yang sedang mengerjakan skripsi [self-disclosure and stress levels in students who are working on their thesis]. *psy, 5*(1), 115–130. <https://doi.org/10.15575/psy.v5i1.2282>
- Goldner, L., Lev-Wiesel, R., & Binson, B. (2021). Perceptions of child abuse as manifested in drawings and narratives by children and adolescents. *Frontiers in Psychology, 11*. <https://www.frontiersin.org/article/10.3389/fpsyg.2020.562972>

- Gu, S., Gao, M., Yan, Y., Wang, F., Tang, Y.-y., & Huang, J. H. (2018). The neural mechanism underlying cognitive and emotional processes in creativity. *Frontiers in Psychology, 9*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.01924>
- Hanggoro, A. Y., Suwarni, L., Selviana, S., & Mawardi, M. (2020). Dampak psikologis pandemi covid-19 pada tenaga kesehatan: A studi cross-sectional di kota pontianak [psychological impact of the covid-19 pandemic on health workers: A cross-sectional study in pontianak city]. *Jurnal Kesehatan Masyarakat Indonesia, 15*(2), 13–18. <https://doi.org/10.26714/jkmi.15.2.2020.13-18>
- Hanley, A. W., Garland, E. L., & Tedeschi, R. G. (2017). Relating dispositional mindfulness, contemplative practice, and positive reappraisal with posttraumatic cognitive coping, stress, and growth. *Psychological Trauma: Theory, Research, Practice, and Policy, 9*(5), 526–536. <https://doi.org/10.1037/tra0000208>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (Second edition). Guilford Press.
- Kim, B., Shin, K.-S., & Chai, S. (2015). How people disclose themselves differently according to the strength of relationship in sns? *JABR, 31*(6), 2139. <https://doi.org/10.19030/jabr.v31i6.9472>
- Kim, Y.-S., & Kang, K.-J. (2021). The relationship among traumatic event experience, self disclosure, social support, and posttraumatic growth of intensive care unit nurses. *Journal of Korean Clinical Nursing Research, 257–266*. Retrieved June 2, 2023, from <http://dx.doi.org/10.22650/JKCNR.2021.27.3.257>
- Kimbley, C. T., Cox, D. W., Kahn, J. H., & Renshaw, K. D. (2023). Feeling pressured to talk about trauma: How pressure to disclose alters the association between trauma disclosure and posttraumatic growth. *J Trauma Stress, 36*(3), 567–578. <https://doi.org/10.1002/jts.22930>
- Ko, Y.-S., Ha, Y.-M., Kim, J.-A., & Cho, H.-A. (2020). Influence of coping, self-disclosure, ruminant, and organizational culture on traumatic growth of firefighters. *Journal of Digital Convergence, 18*(4), 357–369. <https://doi.org/10.14400/JDC.2020.18.4.357>
- Kuka, M., Trnka, R., Mana, J., & Nikolai, T. (2020). Emotional creativity: A meta-analysis and integrative review. *Creativity Research Journal, 32*(2), 151–160. <https://doi.org/10.1080/10400419.2020.1751541>
- Kwaghe, A. V., Ilesanmi, O. S., Amede, P. O., Okediran, J. O., Utulu, R., & Balogun, M. S. (2021). Stigmatization, psychological and emotional trauma among frontline health care workers treated for covid-19 in lagos state, nigeria: A qualitative study. *BMC Health Services Research, 21*(1), 855. <https://doi.org/10.1186/s12913-021-06835-0>
- Lee, D., Kim, S. H., Lee, S., & Choi, S. (2018). The effects of perceived social support and self-disclosure on posttraumatic growth: The mediating effects of stress coping strategy. *The Korean Journal of Counseling and Psychotherapy, 30*(2). <https://doi.org/10.23844/kjcp.2018.05.30.2.371>
- Leite, F. P., & Baptista, P. d. P. (2022). The effects of social media influencers self-disclosure on behavioral intentions: The role of source credibility, parasocial relationships, and brand trust. *Journal of Marketing Theory and Practice, 30*(3), 295–311. <https://doi.org/10.1080/10696679.2021.1935275>



- Ling, W., Yu-Jiao, G. A. O., & Xiao-Yun, Z. (2017). Predictive factors of emotional creativity and the relationship between emotional creativity and coping styles. *Journal of Psychological Science*, 40(5), 1168. <http://www.psycsci.org/EN/>
- Liu, T. (2022). Key role of deliberate rumination in posttraumatic growth among sexually traumatized survivors. *HSET*, 8, 314–320. <https://doi.org/10.54097/hset.v8i.1170>
- Liu, X., Ju, X., & Liu, X. (2021). The relationship between resilience and intent to stay among chinese nurses to support wuhan in managing covid-19: The serial mediation effect of post-traumatic growth and perceived professional benefits. *Nurs Open*, 8(5), 2866–2876. <https://doi.org/10.1002/nop2.874>
- Manning-Jones, S., de Terte, I., & Stephens, C. (2015). Vicarious posttraumatic growth: A systematic literature review. *International Journal of Wellbeing*, 5, 125–139. <https://doi.org/10.5502/ijw.v5i2.8>
- Marriott, B. R., Lewis, C. C., & Gobin, R. L. (2016). Disclosing traumatic experiences: Correlates, context, and consequences. *Psychol Trauma*, 8(2), 141–148. <https://doi.org/10.1037/tra0000058>
- Matos, L., Costa, P. A., Park, C. L., Indart, M. J., & Leal, I. (2021). The war made me a better person: Syrian refugees meaning-making trajectories in the aftermath of collective trauma. *IJERPH*, 18(16), 8481. <https://doi.org/10.3390/ijerph18168481>
- Mohan, M., Joy, L. F., Sivasankar, A., Ali, S., & Meckattuparamban, B. V. (2021). Compassion cannot choose: A call for family-centered critical care during the covid-19 pandemic. *Indian J Crit Care Med*, 25(9), 1049–1050. <https://doi.org/10.5005/jp-journals-10071-23957>
- Munawar, K., & Choudhry, F. (2020). Exploring stress coping strategies of frontline emergency health workers dealing covid-19 in pakistan: A qualitative inquiry. *American Journal of Infection Control*, 49(3), 286–292. <https://doi.org/10.1016/j.ajic.2020.06.214>
- Muralidar, S., Ambi, S. V., Sekaran, S., & Krishnan, U. M. (2020). The emergence of covid-19 as a global pandemic: Understanding the epidemiology, immune response and potential therapeutic targets of sars-cov-2. *Biochimie*, 179, 85–100. <https://doi.org/10.1016/j.biochi.2020.09.018>
- Naa Anyimah Botchway, C. (2022). Emotional creativity. In *Creativity*. IntechOpen. <https://doi.org/10.5772/intechopen.104544>
- Nayebi, H. (2020). *Advanced statistics for testing assumed casual relationships: Multiple regression analysis path analysis logistic regression analysis*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-54754-7>
- Nik Jaafar, N. R., Abd Hamid, N., Hamdan, N. A., Rajandram, R. K., Mahadevan, R., Mohamad Yunus, M. R., Zakaria, H., & Leong Bin Abdullah, M. F. I. (2021). Posttraumatic growth and coping strategies among patients with head and neck cancer: Do approach coping and avoidant coping predict posttraumatic growth over time? *Frontiers in Psychology*, 12. <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.716674>
- ODonovan, R., & Burke, J. (2022). Factors associated with post-traumatic growth in healthcare professionals: A systematic review of the literature. *Healthcare (Basel)*, 10(12), 2524. <https://doi.org/10.3390/healthcare10122524>

- Okoli, C. T. C., Seng, S., Lykins, A., & Higgins, J. T. (2021). Correlates of posttraumatic growth among nursing professionals: A cross-sectional analysis. *J Nurs Manag*, 29(2), 307–316. <https://doi.org/10.1111/jonm.13155>
- Okon-Singer, H., Hendler, T., Pessoa, L., & Shackman, A. J. (2015). The neurobiology of emotion-cognition interactions: Fundamental questions and strategies for future research. *Frontiers in Human Neuroscience*, 9. <https://www.frontiersin.org/articles/10.3389/fnhum.2015.00058>
- Orkibi, H., & Ram-Vlasov, N. (2019). Linking trauma to posttraumatic growth and mental health through emotional and cognitive creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 13(4), 416–430. <https://doi.org/10.1037/aca0000193>
- Park, S., & Park, S. (2019). Employee adaptive performance and its antecedents: Review and synthesis. *Human Resource Development Review*, 18(3), 294–324. <https://doi.org/10.1177/1534484319836315>
- Platte, S., Wiesmann, U., Tedeschi, R. G., & Kehl, D. (2022). Coping and rumination as predictors of posttraumatic growth and depreciation. *Chinese Journal of Traumatology*, 25(5), 264–271. <https://doi.org/10.1016/j.cjtee.2022.02.001>
- Purwaningsih, C. I. I., & Darma, G. S. (2021). Menelisik stres kerja tenaga kesehatan di masa pandemi covid-19 di rumah sakit. *JMB*, 18(3), 361–381. <https://doi.org/10.38043/jmb.v18i3.3179>
- Rahmaningsih, N. D., & Retnowati, S. (2019). *Meningkatkan posttraumatic growth pada korban kekerasan dalam rumah tangga melalui brief empathic love therapy [increasing posttraumatic growth in victims of domestic violence through empathic love therapy]* (Doctoral dissertation). Universitas Gadjah Mada. <https://etd.repository.ugm.ac.id/penelitian/detail/173468>
- Rey, L., Extremera, N., & Pena, M. (2016). Emotional competence relating to perceived stress and burnout in spanish teachers: A mediator model. *PeerJ*, 4:e2087. <https://doi.org/10.7717/peerj.2087>
- Rosyanti, L., & Hadi, I. (2020). Dampak psikologis dalam memberikan perawatan dan layanan kesehatan pasien covid-19 pada tenaga profesional kesehatan [the psychological impact of providing care and health services for covid-19 patients on health professionals]. *Health Information : Jurnal Penelitian*, 12(1), 107–130. <https://doi.org/10.36990/hijp.vi.191>
- Ryu, J.-H., & Suh, K.-H. (2022). Self-disclosure and post-traumatic growth in korean adults: A multiple mediating model of deliberate rumination, positive social responses, and meaning of life. *Frontiers in Psychology*, 13. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.878531>
- Sadeghpour, F., Heidarzadeh, M., Naseri, P., & Nadr-Mohammadi Moghadam, M. (2021). Emotional intelligence as a predictor of posttraumatic growth in patients undergoing hemodialysis. *Illness, Crisis & Loss*, 29(2), 131–142. <https://doi.org/10.1177/1054137318788653>
- Sadler-Smith, E. (2015). Wallas four-stage model of the creative process: More than meets the eye? *Creativity Research Journal*, 27(4), 342–352. <https://doi.org/10.1080/10400419.2015.1087277>

- Selvi, A. J. A., & Aiswarya, B. (2022). Examining the relationship between emotional intelligence and work engagement of automobile sector employees in chennai. *Rajagiri Management Journal*, 17(2), 156–169. <https://doi.org/10.1108/RAMJ-03-2022-0052>
- Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics*, 8(2), 39–42. <https://doi.org/10.12691/ajams-8-2-1>
- Si, M.-Y., Su, X.-Y., Jiang, Y., Wang, W.-J., Gu, X.-F., Ma, L., Li, J., Zhang, S.-K., Ren, Z.-F., Ren, R., Liu, Y.-L., & Qiao, Y.-L. (2020). Psychological impact of covid-19 on medical care workers in china. *Infect Dis Poverty*, 9(1), 113. <https://doi.org/10.1186/s40249-020-00724-0>
- Syambudi, I. (2021). *Kekerasan pada nakes yang terus berulang saat pandemi covid-19 [violence against health workers continues to recur during the covid-19 pandemic]*. <https://tirto.id/kekerasan-pada-nakes-yang-terus-berulang-saat-pandemi-covid-19-gheB>
- Taber, K. S. (2018). The use of cronbachs alpha when developing and reporting research instruments in science education. *Res Sci Educ*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2015). Core beliefs shaken by an earthquake correlate with posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, 7(6), 563–569. <https://doi.org/10.1037/tra0000054>
- Tedeschi, R. G., Cann, A., Taku, K., Senol-Durak, E., & Calhoun, L. G. (2017). The posttraumatic growth inventory: A revision integrating existential and spiritual change: Posttraumatic growth inventory and spiritual change. *Journal of Traumatic Stress*, 30(1), 11–18. <https://doi.org/10.1002/jts.22155>
- Tedeschi, R. G., Shakespeare-Finch, J., Taku, K., & Calhoun, L. G. (2018). *Posttraumatic growth: Theory, research and applications*. Routledge.
- Tekie, Y. T. (2018). *The role of meaning-making in posttraumatic growth among eritrean refugees with posttraumatic stress disorder* (Doctoral dissertation). University of Tennessee, Knoxville. [https://trace.tennessee.edu/utk\\_graddiss/4802](https://trace.tennessee.edu/utk_graddiss/4802)
- Tuck, D., & Patlamazoglou, L. (2019). The relationship between traumatic stress, emotional intelligence, and posttraumatic growth. *Journal of Loss and Trauma*, 24, 1–15. <https://doi.org/10.1080/15325024.2019.1621543>
- Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01454>
- Utz, S. (2015). The function of self-disclosure on social network sites: Not only intimate, but also positive and entertaining self-disclosures increase the feeling of connection. *Computers in Human Behavior*, 45, 1–10. <https://doi.org/10.1016/j.chb.2014.11.076>
- Valgeirsdottir, D., & Onarheim, B. (2017). Studying creativity training programs: A methodological analysis. *Creat Innov Manag*, 26(4), 430–439. <https://doi.org/10.1111/caim.12245>
- Vessal, S. R., Partouche-Sebban, J., & Schiavone, F. (2022). Reliving a traumatic experience through emotional creativity: The bright side of cancer during the covid-19 pandemic. *JOCM*, 35(7), 969–983. <https://doi.org/10.1108/JOCM-11-2021-0348>

- Wagner, A. C., Torbit, L., Jenzer, T., Landy, M. S. H., Pukay-Martin, N. D., Macdonald, A., Fredman, S. J., & Monson, C. M. (2016). The role of posttraumatic growth in a randomized controlled trial of cognitive-behavioral conjoint therapy for PTSD. *J Trauma Stress, 29*(4), 379–383. <https://doi.org/10.1002/jts.22122>
- Wan, X., Huang, H., Peng, Q., Zhang, Y., Hao, J., Lu, G., & Chen, C. (2022). The relation between coping style and posttraumatic growth among patients with breast cancer: A meta-analysis. *Front Psychol, 13*, 926383. <https://doi.org/10.3389/fpsyg.2022.926383>
- Widiyana, E. (2021). *Setahun pandemi corona, dokter dan nakes rela tak bertemu keluarga berhari-hari [a year into the corona pandemic, doctors and health workers are willing to not see their families for days]*. <https://news.detik.com/berita-jawa-timur/d-5478234/setahun-pandemi-corona-dokter-dan-nakes-rela-tak-bertemu-keluarga-berhari-hari>
- Windarwati, H. D., Ati, N. A. L., Paraswati, M. D., Ilmy, S. K., Supianto, A. A., Rizzal, A. F., Sulaksono, A. D., Lestari, R., & Supriati, L. (2021). Stressor, coping mechanism, and motivation among health care workers in dealing with stress due to the COVID-19 pandemic in Indonesia. *Asian J Psychiatr, 56*, 102470. <https://doi.org/10.1016/j.ajp.2020.102470>
- Xiao, S., Luo, D., & Xiao, Y. (2020). Survivors of covid-19 are at high risk of posttraumatic stress disorder. *Global Health Research and Policy, 5*(1), 29. <https://doi.org/10.1186/s41256-020-00155-2>
- Yardeni, N. A., Dekel, R., & Ramon, D. (2024). The contribution of self-disclosure as a personal and interpersonal characteristic within the couple relationship to recovery from posttraumatic stress. *Psychological Trauma: Theory, Research, Practice, and Policy, 16*(1), 125–133. <https://doi.org/10.1037/tra0001385>
- Yeh, Y.-c., Rega, E. M., & Chen, S.-Y. (2019). Enhancing creativity through aesthetics-integrated computer-based training: The effectiveness of a face approach and exploration of moderators. *Computers & Education, 139*, 48–64. <https://doi.org/10.1016/j.compedu.2019.05.007>
- Yeo, H. J., & Park, H. S. (2020). The structural analysis of variables related to posttraumatic growth among psychiatric nurses. *Journal of Korean Academy of Nursing, 50*(1), 26–38. <https://doi.org/10.4040/jkan.2020.50.1.26>
- Zhai, H.-K., Li, Q., Hu, Y.-X., Cui, Y.-X., Wei, X.-W., & Zhou, X. (2021). Emotional creativity improves posttraumatic growth and mental health during the covid-19 pandemic. *Frontiers in Psychology, 12*, 364. <https://doi.org/10.3389/fpsyg.2021.600798>
- Zheng, L., Lu, Q., & Gan, Y. (2019). Effects of expressive writing and use of cognitive words on meaning making and post-traumatic growth [Publisher: SAGE Publications]. *Journal of Pacific Rim Psychology, 13*, e5. <https://doi.org/10.1017/prp.2018.31>
- Zuriguel-Pérez, E., Falcó-Pegueroles, A., Agustino-Rodríguez, S., Gómez-Martín, M. D. C., Roldán-Merino, J., & Lluch-Canut, M. T. (2019). Clinical nurses's critical thinking level according to sociodemographic and professional variables (phase ii): A correlational study. *Nurse Education in Practice, 41*, 102649. <https://doi.org/10.1016/j.nepr.2019.102649>