## RESEARCH



# Harnessing strengths from trauma: examining the impact of strength use on nurses' job satisfaction, positive mental health, and thriving at work through post-traumatic growth

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## Abstract

**Background** While strength use has been shown to foster post-traumatic growth, few studies have examined whether it also influences outcomes such as job satisfaction, work thriving, and positive mental health. Addressing this gap is essential for improving the well-being of healthcare workers under ongoing stress.

**Aim** This study aimed to explore the relationships between strength use, post-traumatic growth, and well-being among nurses, specifically investigating how strength use influences key well-being outcomes such as positive mental health, job satisfaction, and thriving at work. Additionally, the study examined whether post-traumatic growth mediates these relationships.

**Setting/Participants** 1,523 registered nurses from a tertiary hospital in Henan Province, China, who participated in frontline COVID-19 efforts.

**Methods** Data were collected using validated scales to measure strength use, post-traumatic growth, positive mental health, job satisfaction, and thriving at work. Structural equation modeling was used to analyze the relationships among these variables, with bootstrapping methods employed to test the mediation effects.

**Results** The findings demonstrated that strength use is positively associated with job satisfaction (r=0.48, p < 0.001), positive mental health (r=0.49, p < 0.001), and thriving at work (r=0.48, p < 0.001). Additionally, post-traumatic growth was found to mediate the relationship between strength use and these well-being outcomes, with indirect effects observed for job satisfaction( $\beta$ =0.19, 95% CI [0.157, 0.225]), thriving at work ( $\beta$ =0.19, 95% CI [0.161, 0.227]), and positive mental health( $\beta$ =0.17, 95% CI [0.140, 0.208]).

**Conclusion** This study underscores the critical role of strength use and post-traumatic growth in promoting wellbeing among nurses. By illustrating how leveraging personal strengths can foster resilience and psychological growth

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in high-stress environments, the findings provide valuable insights for developing strengths-based interventions aimed at enhancing well-being in demanding professional contexts like nursing.

Clinical trial number Not applicable.

Keywords Strength use, Post-traumatic growth, Positive mental health, Job satisfaction, Thriving at work

## Introduction

Recent developments, including the resurgence of COVID-19 cases and the emergence of new infectious diseases such as monkeypox, have raised ongoing concerns about the impact of pandemics on public health [1-4]. Previous research has extensively documented the negative effects of pandemics on nurses, including increased stress, depression, post-traumatic stress disorder, and adverse physical health outcomes [5, 6]. Nurses, as front-line healthcare workers, have been exposed to a range of stressors and trauma during the COVID-19 pandemic. These stressors include not only the fear of personal infection but also the emotional toll of witnessing patients suffering and dying, often without family support [7]. The rapid escalation of cases, the constant pressure to provide care under resource constraints, and the ethical dilemmas surrounding patient care have contributed to a sense of overwhelming stress. These experiences can lead to what is commonly referred to as "trauma" in high-risk professions like healthcare [7].

However, some studies have also highlighted positive psychological changes, such as post-traumatic growth (PTG), in individuals who endure these challenges [7-9]. PTG refers to the positive psychological changes that can occur as a result of struggling with highly challenging or traumatic experiences [7]. Although nurses have undoubtedly experienced significant stress and trauma during the COVID-19 pandemic, PTG suggests that these very challenges can also foster personal growth. For nurses, PTG may manifest as enhanced resilience, a stronger sense of purpose in their work, improved relationships with colleagues and patients, and a renewed appreciation for life [7, 8]. By actively utilizing their personal strengths, nurses may better navigate these traumatic experiences and emerge with greater psychological strength and well-being. Thus, PTG is particularly relevant for understanding how nurses can not only recover from trauma but also thrive in the aftermath of overwhelming stress.

This study aims to explore the factors that promote PTG, focusing on the potential role of strength use among healthcare workers, particularly nurses. Recent studies, though limited, suggest that individuals who actively use their strengths are more likely to experience PTG [10]. In this context, strengths refer to the inherent talents and abilities that individuals can leverage across various life domains [11]. Despite this emerging

evidence, no research has yet explored whether strength use can enhance PTG and, in turn, influence outcomes such as job satisfaction, work thriving, and mental health. Addressing these questions is crucial for advancing our understanding of how to improve the well-being of healthcare workers in the face of ongoing pandemicrelated stress. Therefore, this study aims to examine the relationship between strength use and PTG among healthcare workers. Specifically, it investigates whether the active application of personal strengths can enhance PTG and subsequently affect key well-being outcomes, including positive mental health, job satisfaction, and work thriving. The findings are expected to provide valuable insights into strategies for enhancing the resilience and overall well-being of healthcare professionals.

## Strength use and well-being

The concept of 'strength use' refers to how individuals apply their unique strengths and talents across various situations [12]. This approach encourages individuals to focus on their strengths rather than their weaknesses, thereby fostering personal and professional growth [13]. Numerous studies have shown that strength use significantly contributes to well-being by enhancing positive emotions, increasing motivation, and improving performance [14, 15].

Well-being, as defined by Diener et al. [16], includes overall life satisfaction as well as satisfaction in specific life domains, such as work. It encompasses contentment with life and fulfillment in both personal and professional aspects [17]. To assess both overall and work-related well-being, this study investigates three variables: positive mental health, job satisfaction, and thriving at work. Positive mental health refers to recognizing one's abilities, coping effectively with stress, working productively, and contributing to the community. It includes emotional resilience and psychological balance [18]. Job satisfaction refers to the degree of contentment and fulfillment with work, encompassing factors such as the nature of work, relationships with colleagues, compensation, and opportunities for growth [19]. Thriving at work describes a state of vitality and learning, where employees feel energized and acquire new skills, enhancing their development and performance [19].

The ability of strength use to promote well-being is explained by the revised Job Demands-Resources (JDR) model [14]. This model identifies strength use as a key job resource that enhances well-being by helping individuals manage job demands, reduce stress, and foster personal and professional growth [20]. Job resources, such as the ability to apply one's strengths, provide employees with the tools they need to navigate challenges, sustain motivation, and achieve their goals. When employees effectively leverage their strengths, they not only feel more competent and autonomous but also experience higher job satisfaction and engagement, which in turn contributes to improved overall well-being [21, 22].

Empirical studies support these assumptions, showing that strength use is positively related to various wellbeing indicators. For example, Bergen [23] found that optimal strength use is linked to improved mental health, particularly by fostering positive emotions. Similarly, Bai and Bai [24] reported that strength use enhances nurses' job satisfaction through the mediating roles of basic psychological needs satisfaction and resilience. Additionally, studies by Ding and Chu [25] show that strength use contributes to thriving at work among medical workers, with self-efficacy mediating the relationship between strength use and thriving. Building on this theoretical framework and empirical evidence, we propose:

**Hypothesis 1** Strength use is positively associated with positive mental health, job satisfaction, and thriving at work among nurses.

## Strength use, PTG, and well-being

We hypothesize that strength use is positively related to nurses' well-being through the mediating effect of PTG. PTG refers to the positive psychological changes that result from struggling with challenging life circumstances, leading to improved functioning [26]. Existing literature provides strong theoretical and empirical evidence for the impact of PTG on three key well-being outcomes—positive mental health, job satisfaction, and thriving at work. These relationships are further explored in the subsequent discussion, where we examine how PTG enhances these outcomes in high-stress environments.

According to the Positive Activity Model [27], engaging in positive activities, such as utilizing personal strengths, can enhance well-being by promoting positive emotions, thoughts, and behaviors. Strength use equips individuals with the tools to navigate adversity, reinterpret experiences, and find meaning, thereby facilitating PTG [15]. By leveraging their strengths, individuals can gain new perspectives, develop a deeper appreciation for life, and strengthen relationships—all key components of PTG that contribute to overall well-being [10].

Empirical evidence supports the link between strength use and PTG. Research indicates that healthcare workers who actively apply their strengths are more likely to experience PTG, as strength use predicts PTG through the mediating roles of self-efficacy and optimism, which help them cope with trauma and stress more effectively [10]. This proactive coping style fosters a sense of agency and control, empowering individuals to overcome adversity and achieve growth beyond their pre-trauma levels [28].

Moreover, PTG has been consistently shown to enhance various aspects of well-being [27, 29]. Numerous studies indicate that PTG contributes to increased life satisfaction, psychological resilience, and emotional wellbeing [29–32]. For example, Pięta and Rzeszutek [33] conducted a systematic review and meta-analysis among individuals living with HIV, revealing a positive, mediumsized association between PTG and measures of positive well-being (e.g., quality of life, life satisfaction), with an effect size of r=0.35. Based on the theoretical framework and empirical evidence, we further hypothesize:

**Hypothesis 2** PTG mediates the relationship between strength use and well-being among nurses. Specifically, strength use is expected to facilitate PTG, which in turn enhances positive mental health, job satisfaction, and thriving at work.

## The current study

While previous research has extensively documented the benefits of strength use and the role of PTG in enhancing well-being, significant gaps remain in understanding these interactions, particularly in high-stress professions such as nursing. Existing literature has largely focused on isolated outcomes, such as mental health or job satisfaction, without exploring the broader, multi-dimensional impacts of strength use across various well-being domains. This study addresses this gap by simultaneously investigating three key well-being outcomes-positive mental health, job satisfaction, and thriving at workproviding a more comprehensive understanding of how strength use influences overall well-being. By considering multiple outcomes, this multi-dimensional approach enhances the robustness of the findings and offers deeper insights for developing targeted interventions to improve well-being in complex professional environments.

In addition to the limited focus on individual outcomes, existing studies have not fully explored the mediating role of PTG in the relationship between strength use and well-being. While the Positive Activity Model suggests that positive activities, such as strength use, can contribute well-being through various mediating mechanisms, empirical research has yet to examine PTG as a mediator within this framework. This gap is particularly important because understanding how PTG functions as a pathway to well-being, especially following trauma, is critical for advancing the field. Nurses, who faced significant psychological and emotional challenges during the COVID-19 pandemic, provide a unique population for exploring this dynamic. PTG offers a critical lens for understanding resilience and recovery. By directly testing PTG as a mediator, this study makes a novel theoretical contribution, providing empirical evidence to extend the Positive Activity Model and offering actionable insights for fostering psychological growth in highstress professions.

This study examines how strength use influences nurses' well-being, specifically focusing on positive mental health, job satisfaction, and thriving at work (Hypothesis 1). Additionally, we explore whether PTG mediates the relationship between strength use and well-being (Hypothesis 2). By concentrating on nurses, this research aims to provide valuable insights into how personal strengths can be leveraged in demanding healthcare environments.

## Methods

## Participants and procedures

This cross-sectional study was conducted between July and August 2024 at a tertiary hospital in Henan Province, China. The study aimed to explore the role of strength use and post-traumatic growth among nurses who participated in frontline COVID-19 efforts. Participants were recruited using a combination of convenience sampling and snowball sampling techniques.

With the cooperation of hospital management, a questionnaire link was distributed to nurses via their work WeChat groups.

## The inclusion criteria were as follows

- 1. Registered nurses with a valid nursing qualification certificate.
- 2. Nurses who actively participated in frontline COVID-19 response efforts.
- 3. Nurses employed at the hospital during the data collection period.

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## Table 1 Characteristics of the study sample

		Number	%
Gender	Female	1457	95.7%
	Male	66	4.3%
Age	20–29 years	452	29.7%
	30–39 years	808	53.1%
	40-49 years	199	13.1%
	>=50 years	64	4.2%
Marital status	Single	275	18.1%
	Married	1215	79.8%
	Divorced	32	2.1%
	Widowed	1	0.1%
Education	Technical nursing school	7	0.5%
	Junior college	141	9.3%
	Bachelor degree	1331	87.4%
	Master degree or above	44	2.9%
Professional title	Nurse	124	8.1%
	Senior nurse	445	29.2%
	Supervisor nurse	929	61.0%
	Associate professor of nursing	22	1.4%
	Professor of nursing	3	0.2%

## **Exclusion criteria included**

- 1. Nursing interns or students who had not yet obtained full professional certification.
- Nurses who did not directly participate in COVID-19 frontline activities.
- 3. Incomplete questionnaires or responses with signs of inattentive or inconsistent answering.

Initially, A total of 1,546 questionnaires were collected. After excluding responses that showed signs of inattentive or inconsistent answering, a total of 1,523 valid responses were retained for analysis. Data quality was assured by applying criteria such as completion time and response consistency checks. Table 1 displays the demographic characteristics of the participants in this study. In addition, descriptive statistics and correlations among key variables were presented in Table 2. Notably, all key variables were positively and moderately correlated with each other (rs from 0.46 to 0.72, ps < 0.001).

## Table 2 Descriptive statistics and correlations among the key variables

Variables	M(SD)	Correlation				
		1	2	3	4	5
1.Strength use	4.38(0.74)					
2.Post-traumatic growth	3.45(0.99)	0.46**	—			
3.Job satisfaction	3.80(0.85)	0.48**	0.55**	_		
4.Thriving at work	3.61(0.61)	0.48**	0.55**	0.72**	_	
5.Positive mental health	3.08(0.70)	0.49**	0.53**	0.69**	0.68**	_
Noto: **n <0.001						

Note: \*\*p < 0.001

### Measures

## Strength use

The Strength Use Scale from the Strength Use and Deficit Correction Questionnaire (SUDCO), developed by van Woerkom et al. [13], was used to assess nurses' use of their strengths. This scale includes 5 items (e.g., I seek opportunities to complete my work in ways that utilize my strengths to the fullest.) Participants rated each item using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher average scores indicate a higher level of strength use. The revised Chinese version of the SUDCO has demonstrated good construct validity and reliability [25]. In this study, the scale achieved a Cronbach's alpha of 0.96.

## Post-traumatic growth

This study employed the Post-Traumatic Growth Inventory-Short Form (PTGI-SF) [34] to evaluate the post-traumatic growth experienced by nurses, with adaptations made to the instructions to specifically address the context of the COVID-19 pandemic, as has been done in previous research [8]. The scale comprises 10 items (e.g., I find myself being stronger than ever after the COVID-19 pandemic), which are rated on a 6-point Likert scale (0 = I have not experienced this change, 5 = Ihave experienced this change to a great extent). Average scores are indicative of the extent of experienced a particular change since the start of the COVID-19 pandemic. The PTGI-SF comprises five subscales, namely: improved relationships with others, new possibilities, personal strength, spiritual change, and appreciation of life. The psychometric properties of the PTGI-SF have been well established [34]. In this study, the Chinese version of the PTGI-SF exhibited satisfactory internal consistency, as indicated by a Cronbach's alpha coefficient of 0.86.

## Job satisfaction

Job satisfaction was assessed using 3 items that align closely with those in the Michigan Organizational Assessment Questionnaire [MOAQ; 35]. An example item is, "Overall, I am satisfied with my job." Participants rated these items on a 5-point scale(1 = totally disagree, 5 = totally agree). Higher average scores are indicative of a greater degree of job satisfaction. The Chinese version of the MOAQ has demonstrated good construct validity and reliability [36]. The scale demonstrated good reliability in the current study, with a Cronbach's alpha of 0.96.

## Thriving at work

We employed the 10-item measure of thriving at work developed by Porath et al. [37]. This measure is composed of two subscales: five items assess learning (e.g., I continue to learn more and more as time goes by), and five items assess vitality (e.g., I feel alive and vital). Items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher average scores are indicative of a higher level of thriving at work. The Chinese version of the scale has demonstrated good construct validity and reliability [38]. In this study, the Cronbach's alpha is 0.85.

## Positive mental health

The unidimensional Positive Mental Health scale [18] was used to assess positive mental health. This selfreport scale consists of 9 general statements designed to measure both eudaimonic and hedonic well-being (e.g., I am often carefree and in a good mood). Participants were asked to indicate their level of agreement on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Higher average scores are indicative of a higher level of positive mental health. The scale has shown good reliability and validity in Chinese samples [39]. Cronbach's alpha was 0.97 for the current study.

## Covariates

We controlled 5 covariates in the current study, including gender (0 = Female, 1 = Male), Age (1 = 20–29 years, 2 = 30–39 years, 3 = 40–49 years, and 4 = above 50 years), marital status (i.e. Single, Married, Divorced, and Widowed), education level(1 = Technical nursing school, 2 = Junior college, 3 = Bachelor degree, and 4 = Master degree or above), and professional level (1 = Nurse, 2 = Senior nurse, 3 = Supervisor nurse, 4 = Associate professor of nursing, and 5 = Professor of nursing).

## **Analytic strategies**

The proposed model was evaluated using structural equation modeling (SEM) with maximum likelihood estimation in Mplus 8.7 [40]. Prior to conducting the SEM, we first assessed the measurement model to ensure that the observed variables reliably represent the underlying latent constructs. Confirmatory factor analysis (CFA) was conducted to examine the factor structure and the goodness of fit of the measurement model. The factor loadings were inspected to verify that all observed variables loaded significantly onto their respective latent variables, with loadings greater than 0.50 considered acceptable. We also evaluated the model fit using the same fit indices applied to the SEM:  $\chi^2$ , RMSEA, CFI, TLI, and SRMR. The measurement model was deemed acceptable if it met the commonly accepted thresholds for good fit, as indicated by Hu and Bentler [44].

After confirming the measurement model, we proceeded with the full SEM analysis. The model fit was evaluated using the following fit indices:  $\chi^2$ , the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the standardized root mean square residual (SRMR). Several widely accepted criteria were applied to assess

model fit. According to Hu and Bentler [44], a CFI and TLI greater than or equal to 0.95, along with an RMSEA less than or equal to 0.08, indicate an acceptable model fit. These thresholds were chosen because they are commonly regarded as indicative of a good fit in the SEM literature, balancing model complexity and fit.

To ensure the adequacy of the model, we first checked for multivariate normality and outliers in the dataset. No violations of normality or significant outliers were found, ensuring the validity of the maximum likelihood estimation approach. We also examined the distribution of the key variables to ensure that any skewness or kurtosis did not significantly affect the analyses. In cases where variables showed substantial deviations from normality, we employed robust standard errors as an additional safeguard.

Regarding the control of variables, several relevant covariates were included in the analysis to account for potential confounding factors. These included age, gender, education level, marital status, and professional level. These controls were included because they have been shown in prior research to influence well-being and could therefore confound the relationships between strength use, PTG, and well-being outcomes. By including these covariates, we aimed to isolate the specific effects of strength use and PTG on the outcomes of interest.

To assess the significance of indirect effects, we employed bootstrapping with 5,000 bootstrap samples and calculated 95% bias-corrected confidence intervals (CIs) [52]. The bootstrap method was chosen because it is robust to violations of normality and does not rely on the assumption of a specific distribution for the indirect effect, which makes it more reliable than traditional methods such as the Sobel test [41]. This method also provides more accurate estimates of the indirect effects and their significance, especially in models with complex mediation processes.

Finally, we assessed the mediation model using the procedure outlined by Preacher and Hayes [45], which involves calculating both direct and indirect effects to understand the pathways through which strength use influences well-being outcomes via PTG. This approach is well-suited for complex mediation analyses and allows for more nuanced interpretation of the data, providing a clearer understanding of the role of PTG as a mediator in the relationship between strength use and well-being.

There was no missing data in the dataset, so no imputation methods were needed. All analyses were conducted on the complete cases.

## Controlling for common-method variance

To minimize the potential impact of common-method variance (CMV), we employed several procedural remedies during the study design and data collection

processes. Specifically, we assured participants of the anonymity and confidentiality of their responses to reduce evaluation apprehension and social desirability bias. The survey items were designed to be clear and concise, avoiding leading or ambiguous questions.

## Ethics approval and consent to participate

The present study received approval from the Ethics Committee of the Department of Psychology, Wuhan University (Number: 2021081602). All procedures were conducted in accordance with the Declaration of Helsinki. Before participation, all participants were thoroughly informed about the study's purpose, potential benefits, possible risks, and how their data would be used. Informed consent was obtained from each participant, ensuring they fully understood and agreed to the study's terms and conditions.

## Results

To address the potential overlap between strength use, PTG, and well-being, we assessed multicollinearity using the variance inflation factor (VIF) in our regression analysis. The VIF values for all predictor variables were below 1.288, indicating no significant multicollinearity between the variables. Specifically, the VIF for strength use was 1.307, and for PTG, it was 1.288, which suggests that these variables were not highly correlated, and multicollinearity did not pose a concern in predicting the three outcomes.

The path model provided a good fit to the current data:  $\chi^2$  (7) = 23.407, p = 0.001, RMSEA = 0.039 with a 90% CI [0.022, 0.057], CFI = 0.995, TLI = 0.981, SRMR = 0.016. As shown in Table 2, we found a positive relationship of strength use with post-traumatic growth ( $\beta$  = 0.46, p < 0.001), job satisfaction ( $\beta$  = 0.48, p < 0.001), thriving at work ( $\beta$  = 0.48, p < 0.001), and positive mental health ( $\beta$  = 0.49, p < 0.001). Post-traumatic growth positively predicted job satisfaction ( $\beta$  = 0.55, p < 0.001), thriving at work ( $\beta$  = 0.55, p < 0.001), and positive mental health ( $\beta$  = 0.53, p < 0.001).

The indirect effects of strength use on job satisfaction, thriving at work, and positive mental health via PTG were estimated using a bootstrap estimation procedure (5000 bootstrap samples were randomly extracted). As shown in Table 3, the mediation effects of PTG between strength use and burnout job satisfaction ( $\beta$ =0.19, 95% CI [0.157, 0.225]), thriving at work ( $\beta$ =0.19, 95% CI (0.161, 0.227)), and positive mental health ( $\beta$ =0.17, 95% CI [0.140, 0.208]) were all statistically significant, as the 95% CIs did not include zero. The results indicated that strength use has an indirect effect on job satisfaction, thriving at work, and positive mental health via PTG (Fig. 1).

 Table 3
 Standardized coefficients of all indirect effects

Paths	β	p	95%Cl [Lower, Upper]
Strength Use $\rightarrow$ PTG $\rightarrow$ Job satisfaction	0.19	< 0.001	[0.157, 0.225]
Strength Use $\rightarrow$ PTG $\rightarrow$ Thriving at work	0.19	< 0.001	[0.161, 0.227]
Strength Use $\rightarrow$ PTG $\rightarrow$ Positive mental health	0.17	< 0.001	[0.140, 0.208]

## Discussion

This study examined the relationship between strength use and PTG among healthcare workers, specifically investigating how strength use impacts key well-being outcomes, including positive mental health, job satisfaction, and thriving at work. The findings support the hypothesis that strength use is positively associated with these outcomes, reinforcing the value of strengths-based approaches in fostering resilience and enhancing the well-being of healthcare professionals. Additionally, the results show that PTG mediates the relationship between strength use and well-being, indicating that leveraging personal strengths not only directly contributes to wellbeing but also facilitates growth following trauma. These insights enhance our understanding of how strength use operates in high-stress environments like healthcare.

The first key finding of this study is that strength use is significantly related to all three types of well-being investigated: positive mental health, job satisfaction, and thriving at work. This relationship can be explained by the fact that utilizing personal strengths enables individuals to engage in tasks that align with their natural talents, which in turn increases motivation and fulfillment [11]. Such alignment enhances job satisfaction, as individuals feel more competent and capable in their roles [24], and improves mental health by reducing stress and increasing resilience [42–44]. Additionally, focusing on strengths promotes continuous learning and growth, fostering a sense of thriving at work [25, 49]. These findings align with previous research demonstrating the positive impact of strength use on various well-being outcomes [24, 45–48].

Another significant finding of this study is the mediating role of PTG in the relationship between strength use and well-being. The results indicate that strength use not only directly enhances well-being but also facilitates PTG, which in turn contributes to improved positive mental health, job satisfaction, and thriving at work. This suggests that leveraging personal strengths helps individuals achieve positive psychological changes following challenges, providing a pathway to growth and adaptation in high-stress environments. The mediating role of PTG highlights its significance as a mechanism through which strength use promotes well-being. According to the Positive Activity Model [27], engaging in positive activities, such as utilizing strengths, fosters positive emotions and behaviors that support psychological growth. Strength use encourages individuals to reinterpret their experiences and find meaning, developing new perspectives and coping strategies that lead to PTG. This process builds resilience, enabling individuals to overcome adversity and emerge with a stronger sense of purpose and fulfillment.

These results align with existing literature on PTG, which underscores its role in enhancing psychological resilience and well-being [26, 39]. By demonstrating the mediating effect of PTG, this study extends the understanding of how strength use can facilitate growth and adaptation in response to trauma. It highlights the potential for strengths-based interventions to support individuals in transforming adversity into opportunities for development, particularly in demanding professions such as nursing.



Fig. 1 Standardized coefficients of the mediation model Note. All coefficients are significant at the *p* < 0.001 level. All covariates are controlled, including gender, age, marital status, education level, and professional level

In summary, this study provides evidence that PTG is a crucial mediator between strength use and well-being, emphasizing its role in enhancing resilience and promoting growth in challenging circumstances. Understanding PTG as a mediator is essential for developing interventions aimed at improving the well-being of individuals in high-stress professions such as healthcare. By focusing on PTG, these interventions can go beyond merely alleviating the negative effects of stress and instead promote positive psychological changes that enhance long-term resilience. For example, encouraging nurses to reflect on and cultivate the growth that arises from their traumatic experiences during the COVID-19 pandemic can help them build greater psychological strength, improve their coping strategies, and foster a renewed sense of purpose in their work. This shift towards promoting PTG offers a more sustainable approach to well-being, as it helps individuals adapt to adversity, ultimately improving job satisfaction, engagement, and overall mental health.

## Limitations and future directions

While this study provides valuable insights into the role of strength use and PTG in enhancing well-being among nurses, several limitations should be acknowledged. First, the cross-sectional design limits the ability to infer causality between strength use, PTG, and well-being. Future research should use longitudinal designs to better understand the causal relationships and temporal dynamics among these variables.

Second, the study relies on self-reported data, which may be subject to social desirability bias and inaccuracies in self-assessment. Future studies could benefit from incorporating objective measures, such as supervisor evaluations or peer assessments, to validate the findings and provide a more comprehensive understanding of strength use and its outcomes.

Third, the sample was limited to nurses from a specific geographic region, which may limit the generalizability of the findings. Furthermore, the use of convenient sampling in this study restricts the ability to generalize the results to broader populations. Future research should employ more diverse and representative sampling methods, such as random sampling, to enhance the generalizability of the findings. Expanding the sample to include nurses from various regions and cultural backgrounds could also provide a more comprehensive view of how strength use and PTG influence well-being across different settings.

Additionally, while this study focused on the mediating role of PTG, other potential mediators and moderators could be explored in future research. Investigating factors such as emotional intelligence, organizational support, or job characteristics could provide deeper insights into the mechanisms through which strength use influences well-being.

Finally, future research could explore the practical implications of these findings by examining the effectiveness of strengths-based interventions in real-world settings. Implementing and evaluating programs that encourage strength use and foster PTG could offer valuable insights into how organizations can enhance employee well-being and resilience, particularly in highstress professions like nursing.

## Implications for practice

The findings of this study have important implications for practice, particularly in high-stress professions such as nursing. By emphasizing the use of personal strengths, organizations can enhance employee well-being and resilience. Here are four key practical implications:

## Implement strengths-based interventions

Organizations should introduce strengths-based interventions and training programs that help employees identify and utilize their inherent talents [15]. These interventions have been shown to increase job satisfaction, motivation, and overall well-being [22, 24]. Encouraging employees to focus on their strengths can lead to higher engagement and productivity.

## Foster perceived organizational support for strength use

Cultivating a supportive culture that recognizes and encourages strength use can significantly enhance employee engagement and well-being [50]. Organizations should actively promote environments where employees feel supported in leveraging their strengths, which can improve both individual and organizational outcomes [48].

## **Enhance support for PTG**

Creating an organizational culture that supports PTG can help employees navigate and grow from challenging experiences. Providing resources for personal development and encouraging reflection can facilitate this growth, helping employees build resilience and adapt in high-stress environments [26].

## Build resilience through tailored support

Recognize that employees have different strengths and needs. By tailoring support to individual strengths and promoting personal growth, organizations can help employees manage stress and thrive in high-pressure situations, ultimately reducing burnout and enhancing long-term well-being [51].

By implementing these strategies, organizations can harness the power of strength use to create a supportive and thriving work environment, ultimately benefiting both employees and the organization.

## Conclusions

This study underscores the critical role of strength use and PTG in promoting well-being among nurses. By demonstrating that strength use is directly associated with well-being and indirectly through PTG, the research provides valuable insights into leveraging personal strengths to foster resilience in high-stress environments. The findings align with the revised JDR model and the Positive Activity Model, highlighting strengths as essential job resources that enhance psychological outcomes. This study extends existing theories by illustrating how strength use facilitates positive psychological changes, offering pathways to greater fulfillment and purpose in professional life.

Furthermore, this research emphasizes the potential of strengths-based interventions to support personal and professional development in demanding professions such as nursing. Encouraging the use of personal strengths within organizations can transform challenges into growth opportunities, thereby enhancing employee well-being and resilience.

In summary, the study highlights the strategic importance of strength use in promoting well-being, offering both practical and theoretical insights to guide future research and organizational practices. By further exploring these dynamics, future research can continue to uncover the mechanisms that contribute to thriving and growth in high-stress environments.

## Abbreviations

PTG	Post-Traumatic Growth
JDR	Job Demands-Resources
PTGI-SF	Post-Traumatic Growth Inventory-Short Form
SUDCO	Strength Use and Deficit Correction Questionnaire
MOAQ	Michigan Organizational Assessment Questionnaire
RMSEA	Root-Mean-Square Error of Approximation
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index
SRMR	Standardized Root Mean Square Residual
CI	Confidence Intervals

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## Author contributions

Study design: Baoyu Bai, Chengzhi Bai Data collection: Baoyu Bai, Jinhui Qiao Data analysis: Jinhui Qiao, Baoyu BaiStudy supervision: Chengzhi Bai Manuscript writing: Chengzhi Bai, Baoyu Bai, Jinhui Qiao Critical revisions for important intellectual content: Chengzhi Bai, Baoyu Bai.

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#### Data availability

The datasets generated during and/or analyzed during the present study are available from the corresponding author on reasonable request.

## Declarations

## Ethical approval

The present study received approval from the Ethics Committee of the Department of Psychology Wuhan University (Number: 2021081602). Before participation, all participants were thoroughly informed about the study's purpose, potential benefits, possible risks, and how their data would be used. Informed consent was obtained from each participant, ensuring they fully understood and agreed to the study's terms and conditions.

## **Consent for publication**

Not applicable. This manuscript does not contain any individual person's data in any form (including individual details, images, or videos) that would require consent for publication.

#### **Competing interests**

The authors declare no competing interests.

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