Self –Efficacy and Empathy as Moderating Variables between Trauma Exposure and Post- Traumatic Growth among Nursing Students

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Abstract

Background: The challenging environment of nursing education often subjects students to elevated levels of stress and trauma, which can have significant psychological effects. This study examines how empathy and self-confidence influence the relationship between trauma exposure plus post-traumatic growth among nursing students. There are two essential qualities that nursing students must possess to enhance patient care and function as a defense against the destructive impacts of trauma: self-confidence and empathy. Self-confidence is defined as one's belief in one's ability to perform tasks and manage situations, Empathy is the capacity to comprehend and relate to another individual's emotional experience. **Aim:** Examining a possible positive correlation between self-efficacy and compassion as determinants of the relationship between nursing students' exposure to trauma and their post-traumatic growth was the aim of this study. **Materials and methods:** The design was descriptive and quantitative. (643) Six hundred and forty-three male and female students from different nursing faculties participated in this study. Data for the study were gathered using four scales: The Post-Traumatic Growth Inventory, the Cumulative Stressors and Traumas Scale, the General Self-Efficacy Scale, and the Empathy Scale. **Results:** 643 students between the ages of 19 and 23 comprised the study sample. Women represented 73.1%. According to the findings, the sample's socioeconomic status was 2.8% high, 93.9% average, and 3.3% low. Of the participants, 2.5% were Christians and 97.5% were Muslims. While girls had more post-traumatic growth than males ($p = 0.03$), males were shown to have higher levels of empathy and self-efficacy ($p = .001$). Furthermore, compared to their younger peers, elder nursing students had stronger self-efficacy and post-traumatic growth scores. It was shown that there was a statistically significant correlation between post-traumatic growth, empathy, and self-esteem. Additionally, there were statistically significant negative correlations ($r = -0.173$ for self-esteem and $r = -0.143$ for empathy) between trauma exposure, empathy, and self-esteem. **Conclusion** The post-traumatic development of nursing students is influenced by both empathy and self-efficacy. Higher levels of self-efficacy and empathy are connected to greater post-traumatic growth and reduced exposure to trauma, illustrating the significance of such characteristics in overcoming and recuperating from traumatic experiences. The study also shows that self-efficacy, empathy, trauma exposure, and post-traumatic growth are all significantly influenced by one's general health status. This emphasizes the necessity of all-encompassing methods in nursing education that give physical and mental health priority.

Key Words: Trauma - Post Traumatic Growth - Self Efficacy - Empathy - Nursing Students

Introduction

The challenging environment of nursing education often subjects students to high levels of stress and trauma also Nursing students frequently face challenging and traumatic situations throughout their education and clinical training. These experiences can have significant psychological impacts, necessitating the exploration of factors that contribute to resilience and growth. This study investigates how self-efficacy and empathy serve as influencing factors in the relationship between trauma exposure and post-traumatic growth among nursing students **(Huijuan, 2024). Kim et al. (2018)** demonstrate the value of empathy in nursing, noting its positive effects on both patient care and nurse well-being.

Self-efficacy, the conviction that one can conduct actions and handle future circumstances, is essential. Nursing students with greater self-efficacy are safely equipped to manage the challenging and frequently stressful circumstances they face during their training. **Bandura (1997)** introduced the concept of self-efficacy, emphasizing its role in how individuals approach goals, tasks, and challenges. According to research by **Zeng et al. (2021),** students' behavioral resilience and growth after traumatic events are positively connected with their level of self-efficacy exhibits that those who have greater self-efficacy are better able to cope with trauma.

In the healthcare sector, self-efficacy is seen as a crucial psychological component that affects healthcare workers' performance and well-being. **(Vardaman et al., 2020)**. Perceived self-efficacy among nursing students determines how they function under stressful circumstances. Higher self-efficacy among nursing students is associated with their ability to overcome difficulties and achieve professional success. Nursing students with higher self-efficacy have also shown that they can create and achieve challenging goals. These attributes transfer to their professional practice. **(Jacobson, 2024).**

Another essential quality for nursing students is empathy, which refers to the capacity to feel and comprehend the emotions of another. Empathy serves as a buffer against the unsafe effects of trauma. Additionally, empathy improves patient care outcomes due to understanding their needs. Empathic people are more likely to grow after traumatic occurrences, according to **Wang et al.'s (2023)** demonstration that empathy mediates the association between social support and post-traumatic growth. Empathy is the capacity to experience and comprehend another person's emotions. Empathy has been seen by scholars as a direct indicator of growth. Numerous research that has shown the connection between empathy and enhanced social connectedness, emotional well-being, and health lend credence to this theory. By using a variety of empathy strategies that incorporate both affect and perception, nursing students can gain from their sympathetic instructors who are in harmony with their surroundings. **(Dou, et al., 2022 & Juan, 2023).**

Trauma represents an event or series of events that overwhelms an individual's capacity to cope effectively. Trauma emerges when someone experiences a frightening and unexpected incident over which they have no control and may have questioned their belief that they live in a secure and predictable world. The likelihood of emotional harm increases with the degree to which the event directly impacts the individual. Especially after a personal experience, shame, sorrow or despair, anxiety, and guilt are known negative emotions that follow trauma. **(Willenborg, 2024)**. Post-traumatic growth (PTG) is a perception created by examining and analyzing how individuals react to significant negative events. The idea refers to the feelings of beneficial physical and mental reactions to a significant life challenge.

PTG centers on the enduring transformations that occur following a thoughtful consideration of the benefits derived from a traumatic event and represents a personal experience of positive psychological growth resulting from the challenge of a significant life crisis **(Tedeschi et al., 2018).** Post-traumatic growth refers to a beneficial psychological transformation that can happen to someone who has experienced trauma. A notable predictor of post-traumatic is personality traits. Students who are balanced, open to new experiences, extroverted, have high self-confidence and optimism are more inclined to experience PTG **(Ercan, 2024).** Factors like self-efficacy and empathy can significantly influence the extent to which nursing students experience PTG following trauma exposure. **Calhoun and Tedeschi (2014)** defined PTG as consisting of five areas: appreciation for life, bearing with others, new life opportunities, personal resilience, and spiritual transformation. Studies by **Li and Hu (2022)** show that psychological

resilience, closely related to self-efficacy, positively correlates with PTG.

Significance of Study

Following traumatic experiences, nursing students may encounter adverse effects on their physical, mental, behavioral, and emotional well-being. Their perceptions of themselves, their profession, others, and the world may be profoundly disrupted, potentially resulting in post-traumatic disorder. Although the negative psychological impacts of trauma have received a lot of attention in research and therapeutic practice, it is equally important to investigate the possible benefits that trauma survivors may encounter **(Huang et al., 2024).** Evidence suggests that individuals who endure trauma often report positive psychological changes, which can contribute to resilience and better coping mechanisms.

Building resilience is essential for nursing students, not only to recover from traumatic experiences but also to prepare for future challenges. To promote resilience and improve general functioning in the day-to-day living of nursing students, researchers and clinicians stress the significance of self-efficacy and empathy **(Dursun & Söylemez, 2020).** From this viewpoint, the present research seeks to investigate the moderating impacts of empathy and self-efficacy in the connection between nurses' students' post-traumatic growth and trauma exposure.

Aim

The purpose of this study is to investigate the possible beneficial relationship between empathy and self-efficacy as mediating factors in the relationship between trauma exposure and post-traumatic growth in nursing students.

Research Questions

RQ 1. What are the significant differences in self-efficacy, empathy, trauma exposure, and PTG based on sociodemographic variables (e.g., gender, social status, income status, and health status) among nursing students?

RQ 2. What are the correlations between self-efficacy, empathy, trauma exposure, PTG among nursing students?

RQ 3. Are self-efficacy and empathy moderating variables in the association between nursing students' experience of trauma besides their post-traumatic growth?

Methods

The study employed a quantitative, descriptive approach to investigate the possible positive association of self-efficacy and empathy as moderating variables concerning trauma exposure and post-traumatic growth in nursing students. It was directed from 22 October 2024 until the end of December 2024.

Setting: data collected through a survey link developed by the researcher and distributed via Google Drive

Approval of ethics and consent to participate.

It was obtained from the Ethics Review Board at Badr University in Cairo, number BUC-IACUC-241020-108, dated October 20, 2024, to conduct research on self-efficacy and empathy as mediating variables of the connection between nurses' students' post-traumatic growth and trauma exposure. Participants were given a thorough explanation of the study's objectives and asked to sign an online informed consent form if they chose to participate. Participation in the survey was completely voluntary, and informed consent was obtained through an online form before its commencement. Each participant spent 15-20 minutes completing the survey.

Participants and sampling: A sample of 643 male and female nursing students from different nursing faculties participated in this study.

Instrument: The researchers will use four validated scales to accomplish the study's aim:

1.General Self-Efficacy Scale: It is a 10-item instrument created by **Schwarzer and Jerusalem (1995)** to evaluate individuals' positive self-perceptions regarding their capability to manage different life challenges. Every item is evaluated on a scale consisting of 4 points, where greater scores indicate greater self-efficacy beliefs. In 28 countries, the scale has demonstrated cross-cultural validity and evaluates a single global dimension. **(Scholz et al., 2002).** Depending on the language adaptation, the Cronbach's alpha reliability ranges from 0.75 to 0.94. **(Luszczynska et al., 2005).** The scale's reliability coefficient in this study is.85, indicating its strength.

2.Empathy Scale: Created by **Shuwaikh (2010),** this is a questionnaire comprising 35 questions intended to assess empathy among adults. Using a 3-point rating system (1 = not applicable at all, 2 = applicable, 3 = very applicable), participants assessed items; higher scores denote greater empathy. The scale has shown convergent validity, significantly correlating with the Sexual Satisfaction Scale (r = 0.42, p = 0.001) and the Companionate Love Scale (r = 0.39, p = 0.04). The internal reliability is robust, showing a Cronbach's alpha of 0.90.

3.The Scale of Cumulative Stressors and Traumas consists of 37 questions derived from the Development-Based Trauma Framework. It evaluates accumulated stressors and traumas across six categories: collective trauma to identity (discrimination), personal trauma to identity (neglect in infanthood), status identity/achievement trauma (unemployment), Trauma of survival (injuries), betrayal and attachment trauma, as well as secondary trauma (e.g., vicarious trauma felt by first responders). It also assesses gender discrimination and life stressors. A 5-point Likert scale (0 = never; 4 = many times) is used to measure the frequency and occurrence of reactions to traumatic events. A 7-point rating scale (1 = extremely positive; 7 = extremely negative) is then used. Appraisal scores are categorized into positive (1-4) and negative (5-7) subcategories. The scale shows remarkable reliability (α = .85), test-retest consistency (.95 over four weeks), and robust validity across translations **(Kira et al., 2008 - Kira & Fawzi, 2013).**

4.Growth Inventory Post Trauma: designed by **Tedeschi and Calhoun (1996**), it assesses perceived beneficial changes after trauma, including enhanced relationships, increased personal strength, and spiritual development. It involves 21 questions, A 6-point rating system used to evaluate (0 = no change; 5 = substantial change), featuring five subscales: connections with others, new opportunities, personal resilience, spiritual transformation, and gratitude for life. Validation studies indicate strong internal consistency (α = .90) and reliable test-retest results (R = .71). The Arabic edition of the scale shows significant reliability (α = .96) **(Kira, et al., 2013).** In the present data, the reliability of the scale is α = .90, and the subscale coefficients vary from .70 to .83.

Results

Table 1: demonstrates that the study sample had a mean age of 20.88 (SD = 0.84), with participants ranging in age from 19 to 23. Females made up 73.1% of the participants. In terms of socioeconomic status (SES), 3.3% identified as belonging to a low SES, 93.9% to middle SES, and 2.8% to high SES. Regarding religious affiliation, 97.5% of participants were Muslim, and 2.5% were Christian.

Table 2: demonstrates that while women show more post-traumatic growth than men (p = 0.03), men possess greater levels of empathy and self-efficiency (p = 0.001). Furthermore, it shows that older nursing students outperform their younger counterparts in terms of self-efficacy and post-traumatic growth. This implies

that both variables tend to get better with age. However, there were no discernible differences in empathy or exposure to trauma between younger and older nursing students.

Table 3 demonstrates that the social status variable had no statistically significant effects ($\alpha < 0.05$) on nursing students' self-efficacy, empathy, trauma exposure, or post-traumatic growth. The study sample's mean scores, however, were much higher than the "poor" scale for every variable and were closer to the "high" or "good" scales for social status traits.

Likewise, no statistically significant differences ($\alpha < 0.05$) were observed in participants' self-efficacy and empathy about income level, but the mean scores for the study sample exceeded the "poor" scale, nearing the "high" scale.

Conversely, notable differences with statistical significance ($\alpha \leq 0.05$) were observed in participants' self-efficacy, empathy, trauma exposure, and post-traumatic growth concerning their general health status. Furthermore, there were significant statistical differences ($\alpha \leq 0.05$) regarding participants' trauma experience and post-traumatic growth concerning their income status.

Table 4 revealed several significant relationships among the variables studied. Both self-efficacy and empathy demonstrated positive correlations with post-traumatic growth in nursing students. Specifically, the correlation coefficients were $r = 0.311$ for self-efficacy and $r = 0.293$ for empathy, indicating that higher levels of these traits are associated with increased post-traumatic growth. These relationships were statistically significant at $\alpha = 0.001$ ($p = 0.001$, $n = 643$).

Conversely, there were significant negative correlations between self-efficacy, empathy, and trauma exposure. The correlation coefficients were $r = -0.173$ for self-efficacy and $r = -0.143$ for empathy ($p = 0.001$, $n = 643$). This points out that higher levels of self-efficacy and empathy are associated with a decrease in trauma exposure among nursing students.

Table 5: The findings revealed that post-traumatic growth was significantly impacted overall by self-efficacy ($p < 0.001$). Additionally, the explicit Effect ($p < 0.001$) demonstrated that self-efficacy was a substantial and favorable predictor of post-traumatic growth. The implied effect of self-efficacy was also significant ($p < 0.001$), suggesting that self-efficacy accounts for 10.5% of the variance in post-traumatic growth and partially mediates the link between trauma exposure and post-traumatic growth.

Additional independent analysis of empathy revealed a substantial implicit effect ($p < 0.001$), a significant explicit effect ($p < 0.001$), and a significant total effect ($p < 0.001$) of empathy on trauma exposure. According to these findings, 14.2% of the variance in the association between trauma exposure and post-traumatic growth can be explained by empathy.

Finally, a substantial overall effect ($p < 0.001$), an explicit effect ($p = 0.009$), and a significant total implied effect ($p < 0.001$) were found in a combined mediation analysis for self-efficacy and empathy. These results suggest that the association between trauma exposure and post-traumatic growth is partially mediated by both self-efficacy and empathy.

Table1: Summarizes Study Characteristics Sample [N= 643]

V	Sample distribution	F	%
Gender	Male	173	26.9%
	Female	470	73.1%
Age	19	9	1.39%
	20	222	34.53%
	21	264	41.06%
	22	116	18.04%
	23	24	3.73%
	24	8	1.24%
Religion	Muslim	627	97.5%
	Christian	16	2.5%
Income Status	Low	21	3.3%
	Moderate	604	93.9%
	High	18	2.8%
Social Status	Single	565	87.87%
	Married	43	6.69%
	Divorced	35	5.44%
Health Status	Excellent	168	26.1%
	Good	457	71.1%
	Poor	18	2.8%

Table 2: Relationship between Self-efficacy, Empathy, Trauma Exposure, Post-Traumatic Growth and study sample Gender & Age [N= 643]

	Variables	Scale	N	Mean	SD	T	p-value
Gender	Self-efficacy	Male	173	29.68	5.84	4.91	0.001*
		Female	470	27.51	4.91		
	Empathy	Male	173	84.24	17.72	3.58	0.001*
		Female	470	79.41	14.79		
	Trauma Exposure	Male	173	9.33	8.71	-2.21	0.03*
		Female	470	11.09	10.15		
	Post-Traumatic Growth	Male	173	26.99	13.89	0.73	0.46
		Female	470	26.19	11.78		
Age	Self-efficacy	≥20	231	26.96	5.57	-4.04	0.001*
		≤21	432	28.67	4.99		
	Empathy	≥20	231	80.18	15.77	-0.62	0.54
		≤21	432	80.96	15.30		
	Trauma Exposure	≥20	231	11.33	9.95	1.23	0.22
		≤21	432	10.26	11.02		
	Post-Traumatic Growth	≥20	231	24.90	12.09	-2.29	0.02*
		≤21	432	27.21	12.46		

(*) Statistically Significant

Table 3: Relationship between study sample Self-efficacy, Empathy, Trauma Exposure, Post-Traumatic Growth and their Social Status, General Health Status, and Income Status. [N= 643]

	Variables	Scale	N	Mean	SD	F	p-value
Social Status	Self-efficacy	Poor	35	26.66	6.93	0.94	0.39
		Good	565	28.11	5.19		
		High	43	28.76	5.50		
	Empathy	Poor	35	76.19	19.40	1.44	0.24
		Good	565	80.95	15.29		
		High	43	77.43	15.46		
	Trauma Exposure	Poor	35	14.90	9.57	1.75	0.18
		Good	565	10.49	10.75		
		High	43	10.52	8.44		
	Post-Traumatic Growth	Poor	35	22.09	15.49	2.15	0.12
		Good	565	26.43	12.33		
		High	43	29.95	9.28		
General Health Status	Self-efficacy	Excellent	168	29.26	5.52	9.34	0.001*
		Good	457	27.78	4.99		
		Poor	18	24.50	6.90		
	Empathy	Excellent	168	83.78	13.48	6.07	0.002*
		Good	457	79.80	15.99		
		Poor	18	73.89	14.93		
	Trauma Exposure	Excellent	168	9.83	11.41	4.59	0.01*
		Good	457	10.65	9.88		
		Poor	18	17.78	18.51		
	Post-Traumatic Growth	Excellent	168	28.59	12.19	4.35	0.01*
		Good	457	25.75	12.20		
		Poor	18	22.39	15.97		
Income Status	Self-efficacy	Low	21	26.93	6.25	2.86	0.06
		Moderate	604	28.12	5.16		
		High	18	29.12	4.67		
	Empathy	Low	21	77.39	19.93	1.94	0.14
		Moderate	604	80.87	15.03		
		High	18	84.22	12.92		
	Trauma Exposure	Low	21	17.95	17.06	15.52	0.001*
		Moderate	604	9.99	9.64		
		High	18	8.65	8.28		
	Post-Traumatic Growth	Low	21	22.11	14.14	5.58	0.004*
		Moderate	604	26.62	12.15		
		High	18	31.52	10.70		

(*) A statistically significant result at p<0.05 ***(--) Unreliable test results***

Table 4: Correlation matrix of nursing students' Self-efficacy, Empathy, Exposure to trauma, and growth post-traumatic

Variables of study	Person correlation coefficient			
	1	2	3	4
Self-efficacy	1			
Empathy	0.48**	1		
Trauma Exposure	-0.17**	-0.14**	1	
Post-Traumatic Growth	0.31**	0.29**	0.11**	1

(**) A statistically significant result at p<0.01

Table 5: The impact of Self-efficacy and Empathy as mediating factors in the relationship. [N= 643]

Model	Estimate	R^2	95% CI	
			LL	UL
Model 1 (Mediation by Self-efficacy)				
Total Effect	0 .333***	0 .105	0 .438	0 .229
Direct Effect	0 .203***	-	0 .300	0 .106
Indirect Effect	0.130***	-	0.189	0.071
Model 2 (Mediation by Empathy)				
Total Effect	0 .333***	0 .142	0 .438	0 .229
Direct Effect	0 .156***	-	0 .250	0 .062
Indirect Effect	0.178***	-	0.246	0.110
Model 3 (Multiple Mediation)				
Total Effect	0.333***	-	0 .438	0 .229
Direct Effect	0.120*	-	0 .210	0 .029
Total Indirect Effect	0.214***	-	0 .287	0 .140

Discussion

This section focuses on the findings and the important role that self-efficacy and empathy play in helping nursing students deal with trauma and post-traumatic growth. It also examined the findings that demonstrate how self-efficacy and empathy mediate the liaison between exposure to trauma and growth post-traumatically variables, and it discussed the study's research questions considering the literature. The study's findings showed that there were 643 nursing students in total, their ages ranged from 19 to 23 years, with 73.1% being female and 26.9% being male; 97.5% of the participants were Muslims and 2.5% were Christians; 3.3% of the participants had a low socio-economic status, 93.9% had a medium socioeconomic status, and 2.8% had a high socio-economic status; the majority of the study sample was unmarried, and the majority were in good health.

The findings of the current study indicate that male nursing students exhibit greater levels of self-efficacy than their female counterparts. This may be attributed to societal norms and gender roles that promote men in leadership and technical positions. Furthermore, the study discovered that male nursing students exhibited greater empathy than female nursing students; this finding runs counter to **Prosen's (2022)** findings, which indicated that female nursing students exhibited greater empathy than male students, supporting the conventional wisdom that women are more sympathetic and caring. Although **Ergün et al. (2019)** did not find any statistically significant gender disparities in nursing students' growth after-traumatic, results of the current study show that female nursing students exhibit more post-traumatic growth than male nursing students, possibly because females have a stronger endurance nature.

According to the findings, older nursing students present elevated levels of self-efficacy and post-traumatic growth than their younger counterparts. This was confirmed by **Aygör and Çayır (2020)** in their research about "The Effect of General Self-Efficacy on Gender Roles in Nursing Students,". **Yun et al. (2020)** found that the development of academic motivation and resilience, which often strengthen with age, contributes positively to the post-traumatic growth of nursing students. This outcome is likely linked to their increasing clinical exposure and confidence. Conversely, **Lachine et al. (2020)** highlighted that younger students might demonstrate higher levels of self-efficacy, especially when provided with adequate guidance and support.

Research by **Li et al. (2019)** indicates that individual resilience, social support, and coping mechanisms significantly contribute to post-traumatic growth, often outweighing the influence of age. Similarly, **Dadipoor et al. (2021)** identified a statistically significant relationship between general health and self-efficacy among nurses. Their findings revealed positive and significant differences between nursing students' self-efficacy levels and their general health, concluding that maintaining an

adequate level of self-efficacy can enhance various aspects of nurses' students overall health. For instance, empathetic healthcare providers are more likely to build strong patient-provider relationships, which can lead to better patient care and better outcomes. This assumption was confirmed by a study by **Messineo et al. (2021)** that suggests that good physical health may contribute to emotional well-being and the ability to empathize with others.

The study also showed that low levels of trauma exposure were associated with excellent general health status; statistically significant differences were identified between nursing students' exposure to trauma and their general health status. This was confirmed by **Dong et al.'s 2021** study that exposure to trauma can negatively impact one's physical and mental well-being. Additionally, **Mayer et al. (2023)** noted that the goal of trauma-informed educational techniques in nursing programs is to enhance student outcomes and lessen re-traumatization. In line with numerous studies that show positive psychological change that results from overcoming extremely challenging life circumstances, the study's findings also showed statistically significant enhancements in nursing students' post-traumatic growth proportional to their health status, this finding is consistent with a study by **Kim et al. (2023),** which shows that emotional regulation and resilience techniques are essential components for successful post-traumatic growth in nursing students.

Additionally, **Lee and Ahn (2023)** clarified that good general health facilitates self-reflection and emotional disclosure, improving PTG among nursing students. Although there is substantial evidence that general health status has an affirmative effect on nursing students' self-assurance, empathy, plus post-traumatic growth, some research may discover that other elements like social support, coping mechanisms, or particular personality traits are more significant **(Lachine et al. 2020 & Yun et al. 2020).** The findings indicated an inverse correlation between participants' income levels and their trauma exposure—greater income leads to reduced trauma exposure, and the opposite is true as well. Individuals with lower socioeconomic status [SES] are more prone to experiencing trauma and tend to have poorer outcomes compared to those with higher SES. according to a study by **Abedzadeh-Kalahroudi 2018**, This lends credence to the notion that having more money can serve as a buffer against exposure to trauma. According to a study by **Matos 2016,** college students' exposure to trauma did not significantly change according to their financial situation, this implies that in certain groups like students, the connection between trauma exposure and income might not be as clear-cut.

Moreover, the study identified a significant association between nursing students' post-traumatic growth and their income levels. This observation is consistent with earlier research, which suggests that individuals from higher socioeconomic backgrounds often enjoy better access to mental health support systems, including therapeutic services, peer assistance, and educational resources. Such advantages are crucial in enhancing their resilience to trauma and fostering post-traumatic growth, as demonstrated by Huang and Wang (2023), who found that individuals with higher SES have better access to healthcare and support systems, which can contribute to positive psychological outcomes after trauma. Also, **Eom et al. (2018)** stated that individuals with higher socioeconomic may have better work-life balance, which is crucial for managing stress and recovering from traumatic experiences. While some research has shown that factors other than income, such as personal resilience, coping strategies, and cultural background, also play a significant role in PTG. These factors can influence PTG independently of income status **(Kim & Kim, 2018)**

The findings demonstrated a statistically significant link between post-traumatic growth and self-efficacy among nursing students, indicating that advanced levels of self-efficacy are associated with greater post-traumatic growth. This may be attributed to the fact that enhanced self-efficacy fosters improved coping mechanisms and resilience, both of which are essential for post-traumatic growth. For example**, Zeng et al. (2021)** conducted a study on nursing students during the COVID-19 pandemic, revealing that self-reflection and emotional self-disclosure—processes linked to

self-efficacy—significantly contributed to post-traumatic growth. This underscores that nursing students who exhibit confidence in their ability to manage stressful situations are more likely to achieve growth following traumatic experiences.

The study result revealed that there was a statistically significant relationship concerning empathy and post-traumatic growth, indicating that higher levels of post-traumatic growth are linked to greater empathy among nursing students, Since empathy refers to understanding and sharing the feelings of others, it is one of the ways to enhance social support and personal relationships, which are vital for growth after trauma this aligns with a study by **Liu et al. (2024)** which demonstrated that cognitive empathy significantly predicts PTG in school bullying victims. Also, a study by **Elam & Taku (2022)** that examined the relationship between empathy and PTG found that empathy can foster emotional connections and support, which are essential for PTG. Although empathy is usually perceived as advantageous, unmanaged high levels could yield unfavorable outcomes. The research by **Lai et al. (2021)** indicates that the dual nature of empathy may cause secondary traumatic stress (STS) or compassion fatigue, thereby obstructing post-traumatic growth (PTG).

The study identified statistically significant negative correlations between self-efficacy and trauma, suggesting that higher levels of self-efficacy are linked to reduced exposure to trauma among nursing students. Self-efficacy is a pivotal factor in managing stress and trauma, as it enhances coping strategies, thereby mitigating the effects of traumatic experiences. This finding is supported by research conducted by **Purwandari et al. (2023),** which demonstrated that nursing students with greater self-confidence exhibited more effective stress management and experienced lower psychological distress. This supports the idea that increased self-efficacy can help nursing students cope with potentially traumatic situations more effectively, thereby reducing their exposure to trauma.

Moreover, the results of the study showed statistically significant negative correlations between trauma and empathy, with more empathy being linked to lower trauma exposure among nursing students. This aligns with findings from **Ye et al. (2024),** among nursing interns, empathy was one of the most effective protective variables against compassion fatigue. Furthermore, the study discovered that self-efficacy plays a major mediating role in the connection between exposure to trauma and growth post-traumatic. The findings show that the connection between trauma exposure and growth post-traumatic is partially mediated by empathy.

Lastly, the findings revealed that self-efficacy and empathy serve as partial mediators in the correlation between exposure to trauma and growth post-traumatic. One's level of self-efficacy has a vast impact on one’s capacity to handle stress and trauma. Higher self-efficacy can enhance coping strategies, leading to better outcomes in terms of PTG. Research by **Lee and Ahn (2023)** involving nursing students demonstrated that self-efficiency played a pivotal intermediating role in linking trauma exposure with post-traumatic growth, indicating that individuals with higher self-efficacy were more capable of converting traumatic experiences into opportunities for personal development. This aligns with the idea that self-efficacy helps individuals manage and make sense of their traumatic experiences, facilitating PTG.

Additionally, Empathy enhances social support and emotional connections, which are crucial for PTG. **Elam and Taku (2022)** conducted a study revealing that empathy serves as a mediator linking trauma exposure with post-traumatic growth by enhancing supportive relationships and emotional resilience. Furthermore, their findings indicated that self-effectiveness and empathy jointly played a significant intermediating role in this correlation, highlighting their synergistic effect in fostering personal growth. This indicates that nursing students who possess both high self-efficacy and empathy are better equipped to handle trauma and experience PTG.

While self-efficacy and empathy are important, the mediation effects can be complex and influenced by other factors. Some studies suggest that the mediation effects of self-efficacy

and empathy may vary depending on individual differences and contextual factors. For example**, Lai et al. (2021)** demonstrated that although self-efficacy and empathy were important mediators, their influence was moderated by variables such as personality characteristics and the presence of social support.This highlights the need to consider multiple variables when examining the mediation effects.

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