

# Effect Of Post Traumatic Stress Disorder On Post Traumatic Growth And Coping Strategies Among Flood Survivors Of Khyber Pakhtunkhwa

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## Abstract

*Present research intended to investigate the relational aspect among PTSD, PTG, and coping strategies like religiosity and parent-peer attachment of flood survivors in Khyber Pakhtunkhwa, Pakistan. More specifically, it was aimed to examine how PTSD significantly predicts PTG and coping mechanisms and differences in these variables among males and females. A correlational research design was used in which a sample of 500 flood survivors (250 males, 250 females) with age ranged 18-25 years was selected through purposive sampling. PTSD was assessed using the Posttraumatic Diagnostic Scale for DSM-V (PDS-5), PTG using the Post-Traumatic<sup>1</sup>Growth Inventory-Short Form (PTGI-SF), religiosity using the Index of Religiosity, and attachment using the Inventory of Parent and Peer Attachment-Revised (IPPA-R). The results revealed that PTSD positively predicted PTG ( $\beta = .727, p < .001$ ) and religiosity ( $\beta = .573, p < .001$ ), but had minimal predictive influence on parent ( $\beta = .052, p = .244$ ) and peer attachment ( $\beta = .065, p = .149$ ). Gender differences were also found, with females exhibiting significantly higher levels of PTSD, PTG, and religiosity, while males reported stronger parent and peer attachment.*

**Keywords:** *Post Traumatic Growth (PTG), Post Traumatic Stress Disorder (PTSD), Coping Strategies, religiosity, parent attachment peer attachment, flood survivors.*

## Introduction

Floods are among the most destructive natural disasters, capable of causing widespread devastation that extends far beyond the immediate aftermath. The physical destruction they bring—destroyed homes, damaged infrastructure, and lost livelihoods—is only part of the story. For survivors, the psychological toll can be just as severe, if not more so. This is especially true in regions like Khyber Pakhtunkhwa (KP), Pakistan, where the geographical and socio-economic conditions make the area particularly vulnerable to such calamities. The region's susceptibility to floods is heightened by its proximity to mountainous terrains, where rapid snowmelt and intense monsoon rains frequently result in severe flooding (Hussain et al., 2021; Shah et al., 2019). This recurring threat not only devastates the physical environment but also leaves lasting psychological scars on the affected populations (Ahmed et al., 2019). The continuous exposure to these disasters exacerbates the stress and anxiety among residents, creating a cycle of trauma that is difficult to break (Imran et al., 2020). Understanding the multifaceted impact of these floods is crucial for developing comprehensive disaster management and mental health strategies that can

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address both the immediate and long-term needs of the affected communities (Teh & Khan, 2021).

The psychological impact of floods often manifests in the form of Post-Traumatic Stress Disorder (PTSD), a severe condition that can significantly impair an individual's ability to function in daily life. PTSD is characterized by symptoms such as intrusive memories, flashbacks, severe anxiety, and emotional numbness, which can persist long after the initial trauma has passed (Zoellner & Maercker, 2006). In regions like KP, where floods are a recurring threat, the likelihood of developing PTSD is compounded by the anticipation of future disasters (Hamidi et al., 2020). The constant fear and anxiety associated with the possibility of another flood can lead to chronic stress, making it difficult for survivors to recover fully (Khan, 2023). Moreover, the lack of adequate mental health services in such regions often means that PTSD goes untreated, leading to a deterioration in the quality of life for many survivors (Cianconi et al., 2020). The long-term psychological effects of floods highlight the need for targeted mental health interventions that can help individuals cope with both the immediate and enduring impacts of these disasters (Shah et al., 2019).

However, as it has been highlighted above, not all who go through a traumatic event will qualify to be considered as PTSD patients. Most of the survivors experience post-traumatic growth (PTG) which is a situation whereby individuals experience a reborn, healthier, and optimized life after being through a traumatic event (Tedeschi & Calhoun 2004). According to Zoellner and Maercker (2006), PTG could be interpreted as self and others' appreciation, enhanced quality of relationships with others, and appreciation of life. Taking into consideration the fact that natural disasters occur repeatedly and sometimes are devastating, as in the case of floods in KP, PTG may serve as a powerful source of support for people affected by these disasters as well as for communities (Ano & Vasconcelles, 2005). PTG in survivors is often accompanied by increased feelings of personal competence and belongingness, which makes it a very helpful source in the reconstruction phase that is occurring collectively (Mikulincer, & Shaver, 2010). Understanding PTG factors facilitates the development of subsequent interventions to prevent the negative impact of trauma not only in survivors but also the larger society (Shah et al., 2020). PTG has the potential to help communities shrug off future adversities and hence, arising from the current study, it was recommended that communities be developed toward PTG.

Cultural and religious practices or beliefs that people of KP hold also cannot be overemphasized when it comes to managing flood trauma as religion is part and parcel of life in this province. Survivor immediately seek for the purpose or reason and structure after the tragedy, and religious practices help the survivor's make meaning out of the loss and find comfort in their faith (Paul, 2014). Religious practices such as offering congregational prayers and other religious practices in KP provides consolation as well as a way for togetherness among the people (Captari et al., 2019). It is the communal aspect of practices that is worth considering as they strengthen the group's ties and offer ways of support people need during the challenging period (Ishaq, 2016). Research indicates that religious coping strategies could minimize psychological symptoms related to trauma, to be a useful part of the process of healing among people in communities affected by disasters (Swaroop, 2013). Religious activities could be a help in shaping meaning and supporting and motivating people, therefore religious practices could have significant function in PTG in flood survivors (Ano & Vasconcelles, 2005).

Besides religious beliefs and practices other cultural values and the cohesively knit social network of Khyber Pakhtunkhwa also has a significant role to play in dealing with traumatized flood affected populace. It also highlights the ethnic density of the region, strong family values that can help people during and after the crisis (Ali et al., 2017). In this sense, having secure attachment bonds within a family is crucial for one's emotional well-being and can considerably improve, in fact, the traumatized person's potential for coping with trauma (Bowlby, 1969). These relationships offer security and predictability, which are salutary for psychological wellbeing (Mikulincer & Shaver, 2010). More specifically, these attachments are particularly crucial when floods are recurring (Fogle et

al., 2020). They enable people to continue functioning as expected despite ongoing adversity (Guo et al., 2022). According to the previous works, people with functional social support have higher PTG as it required emotional assets to overcome difficulties in the recovery process (La Greca et al., 1996). Thus, by the means of familiar and community support, one can strengthen the coping intervention within the flooded people, as well as establish positive psychological processes (Saleem, 2013).

Although numerous studies have been carried out globally in the crossroad between disaster and psychological outcomes including PTSD, PTG, and coping, literature is still scanty and lacking concerning flood victims in Khyber Pakhtunkhwa, Pakistan. Research from around the world reviewed whether environmental, cultural and social factors affect psychological consequences and recovery, highlighting the strengths and weaknesses of recovery in disaster affected communities (Zoellner & Maercker, 2006; Tedeschi & Calhoun, 2004). Similarly, there has been research on these dynamics in the context of Pakistan examining them with reference to flood areas more often than not giving particular emphasis to the psychological effects in the long-run (Shah et al., 2020; Hamidi et al., 2020). Thus far, no research has examined the effect of PTSD and PTG among the flood's survivors in Khyber Pakhtunkhwa, nor how cultural and societal contexts shape their coping styles. These aspects have not received much attention and this study aims to present them in detail, in order for valid conclusions to be drawn so as to offer the appropriate form of support regarding survivors' mental health, including the aspect of healing and self-empowerment post-traumatic circumstances (Ahmed et al., 2019).

### **Theoretical Framework**

Theoretical foundations for this study comprise of both trauma and resilience paradigms, with particular emphasis on the psychological processes in PTSD and PTG among flood affected population of Khyber Pakhtunkhwa, Pakistan. PTSD according to American Psychiatric Association (2013) is a lasting response to trauma and the symptoms of PTSD include the reliving of the episode and the avoidance of situations and objects that reminds the person of the episode and over sensitivity to stimuli. On the other hand, PTG was postulated meaning the positive change which may occur after trauma and is defined in terms of improved sense of the strength, relationships, and purpose (Tedeschi & Calhoun, 2004). It also employs attachment theory whereby Bowlby (1969) and Mikulincer and Shaver (2010) have pointed out that clients who have secure parent and peer attachment have low impact of trauma which leads to positive resilience. Also explored is the role of religiosity whereby religious systems help persons to find a meaningful way of coping with adversities and disasters before during and after such incidences (Smith, 2002; Captari et al 2019). The rationale for this proposed study is to investigate the multiple, complex aspects needed to better understand vulnerability and resilience among flood affected persons so that it can inform the subsequent steps in future mental health interventions that are appropriate to the cultural context and effective.

### **Objectives and Hypothesis**

- To examine the relationship among PTSD, PTG and Coping strategies among flood survivors.
- To study the predictive role of PTSD on PTG and Coping strategies among flood survivors.
- To analyze gender differences on study variables.

Hence, following were the hypothesis:

- H1: PTSD was negatively correlated to PTG, religiosity, and Parent-peer attachment among flood survivors.
- H2: PTG was positively correlated to Religiosity, Parent and Peer attachment.
- H3: PTSD significantly predicted PTG, religiosity, parent and peer attachment among flood survivors.

- H4: There were significant gender differences on PTSD, PTG and Coping strategies i.e., religiosity and parent-peer attachment among flood survivors.

## Methodology

### Study Design

The study used correlational research design.

### Population and Sampling

More than 600,000 people were displaced due to flood in various districts of Khyber Pakhtunkhwa i.e., Dir, Charsadda, Swat, Dera Ismail Khan and Tank (Ali, 2022). Hence, present study intended to target these affected individuals with age range 18 to 25.

500 (250 males and 250 females) sample were chosen using purposive sampling technique from these areas' camps, homes, colleges and shelters using the formula (Yamane, 1967):  $n = \frac{N}{1+N(e)^2}$ .

### Inclusion and exclusion

Flood affected individuals in 2022 with age range 18 to 25 were included, while individuals with known psychological disorders were excluded.

### Instruments

Demographic sheet contained age, gender, socioeconomic status and marital status.

### The Posttraumatic Diagnostic Scale for DSM-V (PDS-5)

Foa et al. (2016) developed the scale having 24-items to screen out PTSD. It has 20-items and start with 2-questions to determine the presence of traumatic event and traumatic experience. The reliability reported was .96 predicting high reliability.

### Post Traumatic Growth Inventory short form (PTGI-SF)

It is a 5-points scoring scale (1= strongly disagree to 5= strongly agree) with a shortened version (Cann et al., 2010). In this study, the shortened version was used with high score indicating greater post traumatic growth. The reliability reported was 0.85 (Cann et al., 2010), and consistent factor structure and validity (Kaler et al., 2011).

### The index of Religiosity

In this study, 27-items scale in Urdu developed by Aziz and Rehman (1996) was used. It has split-half reliability Of 0.80.

### Inventory of Parent and Peer Attachment-Revised (IPPA-R)

It is Likert scale with response range 1= never true to 3= very true having reliability of 0.86 (Gullone & Robinson, 2005).

### Procedure

Purposive sampling technique was used to approach flood affected individuals of Dir, Swat, Charsadda, Tank and Dera Ismail Khan. Inform consent was taken after informing them about the purpose and nature of the study and then booklets were given. Ethical standards were strictly followed and a researcher was for counseling and providing assistance in data collection.

### Results

This section reviewed the results of the study, particularly PTSD and PTG and coping mechanisms among the flood affected persons, KP, Pakistan.

**Table 1** Correlation Matrix of Study Variables (n=500)

Variables	M	SD	PTSD	PDG	IR	PA	PE
PTSD	68.13	9.84	-				
PDG	30.53	5.93	.73**	-			
IR	70.55	20.94	.57**	.36**	-		
PA	59.75	13.19	.05	-.04	-.12**	-	
PE	55.86	9.80	.07	-.03	-.13**	.73**	-

Note: PTSD: Post-traumatic stress disorder; PDG= Post-traumatic Growth; IR= Index of Religiosity; PA= Parent Attachment; PE= Peer Attachment, \*p< .05, \*\*p< 0.001.

The correlation matrix reveals a significant positive relationship between PTSD and PDG ( $r = .73$ ,  $p < 0.001$ ), and between PTSD and IR ( $r = .57$ ,  $p < 0.001$ ). There are significant negative correlations between IR and both PA ( $r = -.12$ ,  $p < 0.001$ ) and PE ( $r = -.13$ ,  $p < 0.001$ ). The relationships between PTSD and PA ( $r = .05$ ) and between PTSD and PE ( $r = .07$ ) are non-significant. Additionally, PA and PE show a strong, significant positive correlation ( $r = .73$ ,  $p < 0.001$ ).

**Table 2** Regression analysis for PTSD predicting PTG and Coping Strategies (n=500)

Variables	B	SE	$\beta$	t	p	R <sup>2</sup>
Post Traumatic Growth	.439	.019	.727	23.66	.000	.529
Religiosity	1.22	.078	.573	15.62	.000	.329
Parent Attachment	.070	.060	.052	1.17	.244	.003
Peer Attachment	.060	.045	.065	1.44	.149	.004

Note: B = unstandardized regression coefficient; SE B = standard error of B;  $\beta$  = standardized regression coefficient; R<sup>2</sup> = coefficient of determination.

The regression analysis shows that PTSD is a significant predictor of Post Traumatic Growth (PTG) and religiosity but has a minimal impact on parent and peer attachment. Specifically, PTSD significantly predicts PTG with a strong positive relationship ( $\beta = .727$ ,  $p < .001$ ), explaining 52.9% of the variance in PTG ( $R^2 = .529$ ). Religiosity also has a significant positive relationship with PTSD ( $\beta = .573$ ,  $p < .001$ ), explaining 32.9% of its variance ( $R^2 = .329$ ). However, PTSD does not significantly predict parent attachment ( $\beta = .052$ ,  $p = .244$ ) or peer attachment ( $\beta = .065$ ,  $p = .149$ ), with very low R<sup>2</sup> values, indicating that these variables explain minimal variance in the context of PTSD.

**Table 3** Mean Difference along Gender on Post-traumatic Stress, Post-traumatic Growth, Religiosity, Parent Attachment and Peer Attachment (n=500)

Variable	Male (292)		Female (208)		t(df)	p
	M	SD	M	SD		
PTSD	67.8	10.6	68.5	8.6	-.82(498)	.02
PDG	30.2	6.3	30.9	5.3	-1.4(498)	.01
IR	66.3	20.8	76.4	19.7	-5.4 (498)	.00
PA	61.3	12.2	57.6	14.2	3.1 (498)	.02
PE	56.8	9.4	54.5	10.2	2.5 (498)	.03

Note: PTSD: Post-traumatic stress disorder; PDG= Post-traumatic Growth; IR= Index of Religiosity; PA= Parent Attachment; PE= Peer Attachment, \*p< .05, \*\*p< 0.0005.

Table 3 illustrates gender differences in psychological and relational variables among 500 participants (292 males and 208 females). Females exhibit significantly higher levels of PTSD ( $p=0.02$ ), post-traumatic growth ( $p=0.01$ ), and religiosity ( $p=0.00$ ) compared to males. Males, on the other hand, report significantly higher levels of parent attachment

( $p=0.02$ ) and peer attachment ( $p=0.03$ ). These findings highlight notable gender-based distinctions in how individuals experience and cope with stress and attachment.

### Discussion

The discussion interprets the results within the broader context of existing research, examining the intricate relationships among PTSD, PTG, and coping strategies among flood survivors. H1 hypothesized that PTSD would be negatively associated with PTG, religiosity, and parent-peer attachment among flood survivors. Contrary to this, PTSD showed a positive but significant correlation with PTG ( $r = .73$ ,  $p < 0.001$ ) and religiosity ( $r = .57$ ,  $p < 0.001$ ) while the correlation with parent attachment ( $r = .05$ ) and peer attachment ( $r = .07$ ) remained insignificant. These results differ from previous studies that normally have reported negative relations of PTSD with positive factors such as PTG and social support, suggesting impairment of psychological well-being and social relations either way. However, the positive correlation of PTSD and PTG agrees with post-traumatic growth theory that there is marked personal development to be experienced along with efforts to cope with trauma, especially through mechanisms like meaning-making and religious coping (Tedeschi & Calhoun, 2006; Joseph & Linley, 2008). The lack of a strong association between PTSD and parent-peer attachment may suggest that the relationship between PTSD and social bonds is very complex and thus modulated by other factors than those studied here, hence warranting further studies to fully understand the dynamics involved in this aspect (King et al., 2006).

The hypothesis (H2) was that PTG would be positively related to religiosity, parent attachment and peer attachment. Partially, the results support this hypothesis. PTG was found to have a moderate positive significant correlation with religiosity ( $r = .36$ ,  $p < 0.001$ ) where it established that clients who experienced higher level of PTG also reported higher level of religiosity. However, in contradiction to the proposed hypothesis, the PTG had a tendency of a non-significant negative correlation with both parent attachment scores and peer attachment scores. These results go against the previous outcome-centered research that unites PTG with better social relationships and support, significant post-traumatic growth is generally believed to facilitate relations with family and peers (Tedeschi and Calhoun, 1996; Park, 2010). The low correlation between PTG and social attachments may indicate that the association between PTG and social factors may not be as straightforward as previously hypothesized, and may be moderated by differences in coping styles or type of trauma (Helgeson et al., 2006). More work is still required to explain these associations and to identify the circumstances in which PTG will facilitate or inhibit the formation of social bonds.

The hypothesis (H3) that PTSD would predict PTG, religiosity, and parent-peer attachment among flood survivors received partial support. PTSD significantly predicted PTG ( $\beta = .727$ ,  $p < .001$ ) and religiosity ( $\beta = .573$ ,  $p < .001$ ), explaining 52.9% and 32.9% of the variance, respectively. However, PTSD did not significantly predict parent attachment ( $\beta = .052$ ,  $p = .244$ ) or peer attachment ( $\beta = .065$ ,  $p = .149$ ), indicating minimal impact on these variables. These findings align with previous research showing PTSD may promote post-traumatic growth, where positive psychological changes occur after traumatic events (Tedeschi & Calhoun, 2004; Zoellner & Maercker, 2006). The strong relationship between PTSD and religiosity may highlight how individuals use religious coping for trauma management, turning to faith for meaning and endurance (Pargament, 2001; Ali et al., 2003). However, the lack of significant prediction for parent and peer attachment suggests PTSD may not strongly affect social bonds, likely due to the varied effects trauma can have on relationships (Brewin et al., 2000; King et al., 2006). This might reflect the complex interaction between coping strategies, social support, and the trauma context, which could either buffer or amplify the effects on attachments. Further research is needed to understand these dynamics better, exploring factors like trauma severity and pre-existing relationship quality (Helgeson et al., 2006).

Hypothesis H4 was supported that revealed significant gender differences. The results revealed that males and females experience and regulate stress and attachment

differently. As demonstrated in Table 3, females had significantly higher mean score of PTSD ( $t=3.32, p=0.02$ ), PTG ( $t=3.86, p=0.01$ ), and religiosity ( $t=11.11, p=0.001$ ) than males. This hints to the fact that females are more vulnerable to experience traumatic events yet they are also better positioned to benefit from the process as well as tend to find comfort in religion. These results corroborate other studies pointing to the fact that women are more vulnerable to developing PTSD because they experience more interpersonal trauma and are equally or even more sensitive to stress of a traumatic nature (Olf, 2017; Christiansen & Elklit, 2022). Additionally, Bryant et al. (2020) established the perception that after the trauma, women engage more in the spirituality as a way of coping. Vice versa, males have higher scores of parent attachment and peer attachment respectively suggesting better relational quality with family and friends. This is in consonance with the literature outlined by Thompson et al. (2021) which observed that male patients hit their close networks for resilience. These gender-related differences also bring into focus, the gender-sensitive contention that while it is necessary to support individuals after trauma, male and female's coping style and subsequent supportive requirement may not be the same.

### **Conclusion**

In conclusion, this study reports significant relationships between PTSD, PTG, and coping strategies, such as religiosity and parent-peer attachment, among flood survivors in Khyber Pakhtunkhwa, Pakistan. PTSD significantly predicted both PTG and religiosity. However, PTSD had a limited predictive influence on parent and peer attachment, indicating these relational aspects may not be as affected by trauma in this context. Gender differences emerged, with females showing higher levels of PTSD, PTG, and religiosity, while males exhibited stronger attachment to parents and peers. These findings emphasize the complexity of post-trauma recovery and how gender shapes these experiences.

### **Limitations and Recommendations for further studies**

A primary limitation of this study is the use of self-reported measures, which could introduce bias, particularly in sensitive areas like PTSD, religiosity, and attachment. Additionally, the sample was restricted to individuals aged 18-25, excluding older survivors who may have different psychological and coping processes. The cross-sectional design also limits the ability to infer causality between PTSD, PTG, and coping strategies. Future research should adopt longitudinal designs to track changes over time and include a broader age range. Incorporating qualitative methods could provide deeper insights into the subjective experiences of trauma and recovery. Interventions aimed at enhancing relational support, especially parent and peer attachment, may improve coping mechanisms and resilience among trauma survivors.

### **Implications**

These findings have several important implications for mental health professionals and policy-makers working with flood survivors and other traumatized populations. Because PTSD and PTG relate positively, interventions need not be focused solely on the reduction of trauma symptoms but should support personal growth and resilience in their own right. The strong association of PTSD with religiosity suggests blending culturally sensitive approaches with spiritual coping mechanisms, especially in religious communities. Gender differences in coping strategies suggest that tailored interventions may be more effective, addressing unique needs both for males and females. The limited effects of PTSD on the attitudes of parent and peer attachment underline the promotion of social support systems as protective factors that may improve recovery and long-term psychological well-being.

### **References**

- Ahmed, B., Sarwar, M., Anjum, M. N., Yasin, M., & Kamran, M. A. (2019). Flood Vulnerability Assessment and Zonation Mapping Using Remote Sensing and GIS Techniques: A Case Study of District Swat, Pakistan. *Geocarto International*, 34(10), 1081–1100. <https://doi.org/10.1080/10106049.2018.1455264>

- Ai, A. L., Tice, T. N., Peterson, C., & Huang, B. (2005). Prayers, spiritual support, and positive attitudes in coping with the September 11 national crisis. *Journal of personality*, 73(3), 763-792. <https://doi.org/10.1111/j.1467-6494.2005.00328.x>
- Ali, M. (2022). Floods cost Khyber Pakhtunkhwa Rs68 billion, claims govt. DAWN Retrieved from <https://www.dawn.com/news/1707946/floods-cost-khyber-pakhtunkhwa-rs68-billion-claims-govt>. Retrieved on (2 September 2022).
- Ali, S., Shahbaz, M., & Bakhsh, K. (2017). Socioeconomic and Demographic Vulnerability to Flood Hazards in the Northern Mountainous Regions of Pakistan. *Natural Hazards*, 88(3), 1469–1488. doi:10.1007/s11069-017-2929-9
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.).
- Ano, G. G., & Vasconcelles, E. B. (2005). Religious coping and psychological adjustment to stress: A meta-analysis. *Journal of clinical psychology*, 61(4), 461-480. <https://doi.org/10.1002/jclp.20049>
- Aziz, S., & Rehman, G. (1996). Self control and tolerance among low and high religious groups. *Journal of Personality and Clinical Studies*.
- Bowlby, J. (1969). *Attachment and Loss: Vol. 1. Attachment*. Basic Books.
- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of consulting and clinical psychology*, 68(5), 748. <https://psycnet.apa.org/doi/10.1037/0022-006X.68.5.748>
- Bryant, R. A., O'donnell, M. L., Creamer, M., McFarlane, A. C., Clark, C. R., & Silove, D. (2010). The psychiatric sequelae of traumatic injury. *American Journal of Psychiatry*, 167(3), 312-320. <https://doi.org/10.1176/appi.ajp.2009.09050617>
- Cann, A., Calhoun, L. G., Tedeschi, R. G., Taku, K., Vishnevsky, T., Triplett, K. N., & Danhauer, S. C. (2010). A short form of the Posttraumatic Growth Inventory. *Anxiety, Stress, & Coping*, 23(2), 127-137. <https://doi.org/10.1080/10615800903094273>
- Captari, L. E., Hook, J. N., Aten, J. D., Davis, E. B., & Tisdale, T. C. (2019). Embodied spirituality following disaster: Exploring intersections of religious and place attachment in resilience and meaning-making. *The Psychology of Religion and Place: Emerging Perspectives*, 49-79. [https://doi.org/10.1007/978-3-030-28848-8\\_4](https://doi.org/10.1007/978-3-030-28848-8_4)
- Christiansen, D. M., Martino, M. L., Elklit, A., & Freda, M. F. (2022). Sex differences in the outcome of expressive writing in parents of children with leukaemia. *Clinical Psychology in Europe*, 4(1). <https://doi.org/10.32872%2Fcpe.5533>
- Cianconi, P., Betrò, S., & Janiri, L. (2020). The impact of climate change on mental health: a systematic descriptive review. *Frontiers in psychiatry*, 11, 74. <https://doi.org/10.3389/fpsy.2020.00074>
- Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Powers, M. B., Kauffman, B. Y., & Knowles, K. (2016). Psychometric properties of the Posttraumatic Diagnostic Scale for DSM-5 (PDS-5). *Psychological assessment*, 28(10), 1166. <https://psycnet.apa.org/doi/10.1037/pas0000258>
- Fogle, B. M., Tsai, J., Mota, N., Harpaz-Rotem, I., Krystal, J. H., Southwick, S. M., & Pietrzak, R. H. (2020). The National Health and Resilience in Veterans Study: a narrative review and future directions. *Frontiers in psychiatry*, 11, 538218. <https://doi.org/10.3389/fpsy.2020.538218>
- Gullone, E., & Robinson, K. (2005). The inventory of parent and peer attachment—Revised (IPPA-R) for children: a psychometric investigation. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, 12(1), 67-79. <https://doi.org/10.1002/cpp.433>
- Guo, X., Zhang, Y., Chen, Y., & Zhang, L. (2022). School victimization and self-esteem: Reciprocal relationships and the moderating roles of peer support and teacher support. *Aggressive behavior*, 48(2), 187-196. <https://doi.org/10.1002/ab.22009>
- Hamidi, A. R., Zeng, Z., & Khan, M. A. (2020). Household vulnerability to floods and cyclones in Khyber Pakhtunkhwa, Pakistan. *International journal of disaster risk reduction*, 46, 101496. <https://doi.org/10.1016/j.ijdrr.2020.101496>
- Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of consulting and clinical psychology*, 74(5), 797. <https://psycnet.apa.org/doi/10.1037/0022-006X.74.5.797>
- Hussain, M., Tayyab, M., Zhang, J., Shah, A. A., Ullah, K., Mehmood, U., & Al-Shaibah, B. (2021). GIS-based multi-criteria approach for flood vulnerability assessment and mapping in district Shangla: Khyber Pakhtunkhwa, Pakistan. *Sustainability*, 13(6), 3126. <https://doi.org/10.3390/su13063126>



- Ishaq, M. (2016). *Socio-Political Impacts of the Contemporary Religious Movements in AJK Pakistan: An Empirical Study on Competing Visions of an Ideal Islamic Society* (Doctoral dissertation, University of Gloucestershire).
- Joseph, S., & Linley, P. A. (2008). *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress*. John Wiley & Sons.
- Kaler, M. E., Erbes, C. R., Tedeschi, R. G., Arbisi, P. A., & Polusny, M. A. (2011). Factor structure and concurrent validity of the Posttraumatic Growth Inventory–Short Form among veterans from the Iraq War. *Journal of traumatic stress, 24*(2), 200-207. <https://doi.org/10.1002/jts.20623>
- Khan, M. B. (2023). Deforestation in Pakistan and its influence on natural production. *International Research Journal of Social Sciences and Humanities, 2*(1), 36-44. Retrieved from <https://irjssh.com/index.php/irjssh/article/view/28>
- King, D. W., Taft, C., King, L. A., Hammond, C., & Stone, E. R. (2006). Directionality of the association between social support and Posttraumatic Stress Disorder: A longitudinal investigation 1. *Journal of applied social psychology, 36*(12), 2980-2992. <https://doi.org/10.1111/j.0021-9029.2006.00138.x>
- King, P. E. (2019). Religion and identity: The role of ideological, social, and spiritual contexts. In *Beyond the self* (pp. 197-204). Routledge.
- La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, M. J. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: a prospective study. *Journal of consulting and clinical psychology, 64*(4), 712.
- Mikulincer, M., & Shaver, P. R. (2010). *Attachment in adulthood: Structure, dynamics, and change*. Guilford Publications.
- Oloff, M. (2017). Sex and gender differences in post-traumatic stress disorder: an update. *European journal of psychotraumatology, 8*(sup4), 1351204. <https://doi.org/10.1080/20008198.2017.1351204>
- Pargament, K. I. (2001). *The psychology of religion and coping: Theory, research, practice*. Guilford press.
- Park, C. L. (2010). Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological bulletin, 136*(2), 257. <https://psycnet.apa.org/doi/10.1037/a0018301>
- Paul, S. J. (2014). *Pakistan against itself: The rise of extremism* (Master's thesis, University of New Brunswick). University of New Brunswick. <https://unbscholar.lib.unb.ca/bitstreams/8b13c424-3eb9-41bc-88f1-bfb5097c19ee/download>
- Saleem, S. (2013). *Flood and socio-economic vulnerability. New challenges in women's lives in northern Pakistan* (Master's thesis, The University of Bergen).
- Shah, A. A., Gong, Z., Pal, I., Sun, R., Ullah, W., & Wani, G. F. (2020). Disaster risk management insight on school emergency preparedness—a case study of Khyber Pakhtunkhwa, Pakistan. *International Journal of Disaster Risk Reduction, 51*, 101805. <https://doi.org/10.1016/j.ijdrr.2020.101805>
- Shah, S. M. I., Ahmad, I., & Rehman, A. (2019). Urban Growth and Land Use Change in District Peshawar, Khyber Pakhtunkhwa, Pakistan. *The Egyptian Journal of Remote Sensing and Space Science, 22*(3), 301–309. <https://doi.org/10.1016/j.ejrs.2019.06.001>
- Swaroop, S. R. (2013). *Phenomenological perspectives on internal displacement and healing: Implications for evidence-based therapies* (Doctoral dissertation, The Chicago School of Professional Psychology).
- Taniguchi, E., & Thompson, C. M. (2021). Mental illness self-disclosure among college students: a pre-requisite of social support or a booster of social support benefits?. *Journal of Mental Health, 30*(3), 323-332. <https://doi.org/10.1080/09638237.2021.1922626>
- Tedeschi, R. G., & Calhoun, L. G. (2004). " Posttraumatic growth: conceptual foundations and empirical evidence". *Psychological inquiry, 15*(1), 1-18. [https://doi.org/10.1207/s15327965pli1501\\_01](https://doi.org/10.1207/s15327965pli1501_01)
- Tedeschi, R. G., & Calhoun, L. G. (2006). Time of change? The spiritual challenges of bereavement and loss. *OMEGA-Journal of Death and Dying, 53*(1), 105-116. <https://doi.org/10.2190/7MBU-UFV9-6TJ6-DP83>
- Teh, D., & Khan, T. (2021). Types, Definition and Classification Classifications of Natural Disasters Natural disasters and Threat Level Threat levels. In *Handbook of Disaster Risk Reduction for Resilience: New Frameworks for Building Resilience to Disasters* (pp. 27-

56). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-030-61278-8\\_2](https://doi.org/10.1007/978-3-030-61278-8_2)

Yamane, T. (1967). *Statistics, An Introductory Analysis*, 2nd ed., New York: Harper and Row.

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology—A critical review and introduction of a two-component model. *Clinical psychology review*, 26(5), 626-653. <https://doi.org/10.1016/j.cpr.2006.01.008>