Strengths Amidst Adversity: Comparison of Religiosity, Resilience and Locus of Control in Army Public School Affected Individuals and General Population

Roomana Zeb[1], Bargees Khattak[2] and Saima Arzeen[3]

Abstract

The primary objective of this study was to compare the responses of individuals affected by the Army Public School (APS) incident and the general population on the factors of religiosity, resilience, and locus of control. A sample of 103 APS affectees and 103 individuals from the general population was taken to pursue these objectives. The study employed three scales: the State-Trait Resilience Inventory (Hiew, 2000), the Religiosity Scale from the Multidimensional Personality Inventory (Zeb, 2013), and the Locus of Control Scale (Levenson, 2003), which were administered to the selected participants. The average age of the participants was 21 years. The study outcomes highlighted notable disparities between Army Public School affectees and the general population regarding religiosity, resilience, and locus of control scales. Furthermore, the results demonstrated a positive correlation between religiosity and resilience. It was observed that the internal locus of control exhibited a positive correlation with both religiosity and resilience. Conversely, the external locus of control negatively correlated with religiosity and resilience.

Keywords: APS affectees, Religiosity, Resilience, Locus of Control

Introduction

Terrorism is viewed as a deliberate and extreme manifestation of violence in response to perceived injustices. Its impact has placed a heavy burden on South Asian countries due to its profound ramifications on social, economic, political, and physical infrastructures. Pakistan, in particular, has borne the greatest social, economic, and human toll of terrorism (Daraz et al., 2012). Notably, Pakistan faced significant attacks between 2007 and 2009, which declined after military operations were initiated against the terrorist groups. The Watson Institute for Public and International Affairs at Brown University reported that 8,832 Pakistani security personnel and 23,372 civilians died during the war on terrorism (Crawford, 2018).

The most severe instance of terrorism occurred in Pakistan on December 16, 2014, at the Army Public School. During this tragic event, terrorists infiltrated the school's auditorium and classrooms, resulting in the deaths of approximately 120 individuals, including faculty, staff, and students, and leaving more than 100 others injured (as cited in reserchpedia.info/terrorist-attack-on-army-public-school-peshawar). The December 16, 2014, events were deeply distressing for both the general populace and, more significantly, for the survivors and families of the victims. Terrorism can have physical and psychological consequences (Tanielian & Stein, 2014). Those affected by terrorism may endure physical injuries or the loss of loved ones, leading to psychological issues such as posttraumatic stress disorder (Khan et al., 2018). While being a victim of a terrorist attack increases susceptibility to psychological challenges,

[1]*Assistant Professor, Department of Psychology, University of Peshawar, Pakistan*
Email: roomazeb@uop.edu.pk
[2] *Lecturer, Shaheed Benazir Bhutto Women University Peshawar, Pakistan, Email: bargeesk@yahoo.com*
[3]*Lecturer, Department of Psychology, University of Peshawar, Pakistan,*
Email: saimaarzeenmehar@uop.edu.pk

individuals often adopt a fight response and employ various mechanisms to navigate unexpected situations. This phenomenon was also observed among the survivors of the APS incident and their families. Following the school's reopening, students returned, granting media interviews with composure and calmness. They expressed submission to the will of God. Observing the behavior of the victims and their families highlighted the employment of certain variables to cope with such a tragic event. Analyzing their media interactions (e.g., Katz, 2014), three psychological traits – namely, religiosity, resilience, and locus of control – emerged as potential mechanisms used by those affected to counter the onset of psychological issues like depression and anxiety. Notably, two survivors, Waleed Khan (The Express Tribune, 2022) and Ahmed Nawaz (British et al. Islamabad, 2019), have consistently exhibited resilience in their numerous interviews and present lives eight years after the attack. Given Pakistan's status as an Islamic state with a predominantly Muslim population, religion could serve as a resource employed by the affected individuals to cope with the adversity they have endured. Islam promotes the belief in destiny, particularly that one's death is predetermined and that challenges and hardships are tests from God to assess one's steadfastness. Such beliefs could aid survivors in accepting the reality and finding ways to cope.

Research indicates that religion influences an individual's well-being (Villaini et al., 2019). Religiosity pertains to an individual's inclination to embrace religious ideologies, norms, and activities (Hoskin, 2019). Spilka, Hood, and Gorsuch (1985) proposed that religion could be a psychotherapy for individuals facing psychological disturbances. Studies have shown that people resort to religion in times of crisis; for example, García et al. (2017) evaluated the correlation between positive and negative religious coping with posttraumatic symptoms and posttraumatic growth. Findings revealed that negative religious coping positively predicts posttraumatic stress, whereas positive religious coping increases posttraumatic growth. Similar findings were reported by Berzengi et al. (2017) among Muslim trauma survivors. They suggested that understanding PTSD in the Muslim population should focus on their trauma-related cognitions, which shows their heavy emphasis on Islamic beliefs and values.

Rizvi and Hossain (2017) explored the link between religiosity and well-being across various religions. Their meta-analysis uncovered that none of the 31 studies involving Muslim participants revealed an insignificant correlation between these two constructs. Correspondingly, Abdel-Khaleq (2014) affirmed that Islam furnishes a value system to its adherents, with numerous studies consistently demonstrating a positive association between religiosity and well-being. He advocated for integrating religiosity into psychotherapies for individuals encountering challenging life circumstances. In a study by Dadfar, Lester, and Abdel-Khaleq (2021), noteworthy negative correlations were identified between religiosity and both happiness and suicidal intentions among patients.

Furthermore, they suggested that incorporating religious practices within psychiatric treatment could enhance the patients' subjective well-being. Chen et al (2021) conducted two cross-sectional studies to examine trauma's impact on survivors' well-being by its impact on positive and negative religious coping, forgivingness, and hope. The results revealed that where survivors' trauma increased negative religious coping, it lowered forgiveness and hope and consequently lowered their well-being. In situations where survivors' trauma contributed to higher positive religious coping, it resulted in greater forgiveness and hope, positively impacting their well-being. These investigations collectively underscore the potential of religiosity to enhance overall well-being, particularly during times of crisis. Almeida, Neto, and Koening (2006) also emphasized that religious beliefs can improve acceptance, tolerance, self-image, and resilience.

Resilience refers to the capability to effectively handle stressful or catastrophic situations positively and healthfully (Kte'pi, 2020). Individuals possessing resilient qualities tend to experience only temporary and minor disruptions in functioning following disasters, eventually

demonstrating a healthy adjustment over time (Bonanno, as cited in Wald et al., 2008). Essential attributes of resilience, such as mindfulness, self-discipline, problem-solving acumen, and social support (Cherry, 2023), may equip individuals to confront life's challenging events.

Ann and Bae (2022) have demonstrated resilience's mediating role in posttraumatic stress disorder cases. Their study probed into the effects of disaster trauma, disaster-related conflicts, and economic setbacks on posttraumatic stress disorder (PTSD). Furthermore, they explored the moderating impact of personal and community resilience in these relationships. The findings underscored that resilience moderated the associations between disaster trauma, economic losses, and PTSD. Similarly, Nawaz, Khan, and Fazaldad (2023) substantiated the role of resilience in moderating the link between posttraumatic stress and suicidal ideation among institutionalized orphans.

Dienstbier's (1998) theory of toughness offers valuable insights into the potential for inner strength to develop through exposure to adverse events. This theory proposes that individuals who confront challenging situations, such as disasters, can emerge from these experiences with enhanced emotional resilience and coping capacities. The premise of this theory is that facing difficulties can foster personal growth and mental fortitude. Empirical evidence corroborates Dienstbier's theory, particularly in the context of posttraumatic growth. Posttraumatic growth refers to positive psychological changes resulting from coping with highly distressing or traumatic events. Elam and Taku (2022) conducted research that supports the notion that traumatic experiences can lead to posttraumatic growth. Their findings demonstrated that individuals who have encountered trauma exhibit significant personal development and transformative changes in their outlook on life, values, and priorities. This phenomenon is attributed to the profound psychological process triggered by confronting adversity. In distinguishing between resilience and posttraumatic growth, it is crucial to recognize their underlying coping mechanisms. Resilience involves adapting to and managing challenges actively and passively effectively. Resilient individuals are equipped to bounce back from difficulties, maintaining psychological well-being even in the face of adversity.

On the other hand, posttraumatic growth encompasses a more intricate psychological journey. It arises from disillusionment and disappointment, which prompts individuals to reassess their beliefs, values, and life goals. This internal struggle ultimately leads to transformative changes that shape a new perspective on life's meaning and purpose (Elam & Taku, 2022). Similarly, resilient individuals often partake in constructive cognitive assessments of stressful occurrences. They view setbacks as temporary and controllable, concentrating on the elements they can influence. This cognitive process aligns with the mindset of those possessing an internal locus of control (Lefcourt, 1982). Benight and Bandura's research in 2004 further lends support to the notion that individuals with high self-efficacy, a component of the internal locus of control, demonstrate more positive cognitive evaluations when facing challenges. Bandura's concept of Self-Efficacy, defined as the belief in one's capacity to accomplish tasks and surmount difficulties, is closely intertwined with the internal locus of control (Rotter, 1966). A study by Maddux and Rogers 1983 showcased the close association between self-efficacy beliefs and the internal locus of control, underscoring their pivotal role in fostering resilience. This link between resilience and locus of control (LOC) suggests that LOC can also play a role in combating difficult circumstances. Rotter delineated this concept into internal and external loci of control. Individuals possessing an internal locus of control perceive themselves as having agency over their lives (Majzub et al., 2009). Conversely, those with an external locus of control attribute their actions to external influences and regard the ensuing outcomes as beyond their command (Zaidi & Mohsin, 2013). Such individuals view their lives as subject to the sway of luck, chance, or external forces, particularly those wielding greater power than them.

Research has shown that locus of control mediates long-lasting trauma and posttraumatic stress (Atilola et al., 2021). Similarly, studies indicate that individuals with an internal locus of control exhibit fewer symptoms of posttraumatic stress disorder (PTSD) and an increase in resilience, implying a connection between locus of control and posttraumatic growth (Böttche et al., 2016). The correlation between the aftermath of trauma and locus of control hinges on how individuals attempt to cope. Individuals with an internal locus of control strive to enhance their functioning by adopting novel coping strategies (Zhang et al., 2014).

Zhang and colleagues (2014) have suggested that an internal locus of control may serve as a protective factor against PTSD, potentially due to these individuals' greater emotional well-being before encountering trauma. Their research also unveiled that those with an internal locus of control tend to experience higher life satisfaction, including better-navigating life's challenges (Buddelmeyer & Powdthavee, 2015). Conversely, individuals scoring higher on an external locus of control may believe they cannot alter their circumstances, attributing the trauma to factors beyond their control. Consequently, they might encounter difficulties alleviating emotional distress through various coping mechanisms (Zhang et al., 2014). Consequently, an external locus of control is linked to higher rates of PTSD and more maladaptive coping strategies (Zhang et al., 2014). Given these findings, the locus of control will be further explored as a potential moderator in mental health research (e.g., Carter, Mollen, & Smith, 2014).

Despite the indications provided by the studies above that an external locus of control is positively associated with posttraumatic stress, it is important to consider the context of the Muslim faith in destiny, an integral aspect of their belief system. In light of this, the current study examined the interplay between internal and external locus of control concerning their connections with resilience and religiosity. Contrary to perceiving external locus of control solely as a negative attribute, it might serve a constructive purpose during periods of unpredictability and adversity. For this reason, anticipation was formed for a positive correlation to emerge among religiosity, resilience, and locus of control. Numerous studies have suggested its positive correlation with resilience for internal locus of control. For example, Cazan and Dumitrescu (2016) discovered that adolescents displaying high levels of resilience (N=156) tend to possess elevated self-esteem and a greater inclination towards internal rather than external orientation. Gender differences were not observed concerning resilience and its various dimensions. Similarly, the research by Georgescu, Duiu, Cheiban, Mazilu, Rotariu, Toma, and Barangă (2019) also affirmed a connection between locus of control and resilience.

Rationale of the study

In the aftermath of terrorist attacks, intense emotional reactions like fear, guilt, anger, and depression prevail (Department of Justice Federal Bureau of Investigation Office for Victim Assistance, n.d.). Existing research often emphasizes such traumatic events' negative aftermath and psychological distress. However, an underexplored facet is the potential existence of positive psychological factors acting as shields against post-event distress. This study aims to delve into this intriguing realm, focusing on optimistic psychological aspects that could serve as buffers for those affected by terrorist attacks. Specifically, the research aims to uncover the intricate positive attributes that contribute to individual resilience and enhance coping abilities in adversity.

The study takes a comprehensive approach by investigating the interaction of three core psychological factors: religiosity, resilience, and locus of control. Religion acknowledged for its profound meaning-giving role, is hypothesized to interact with resilience and locus of control, creating a synergistic effect that enhances an individual's psychological well-being post-trauma. Moreover, the study seeks to discern how these interconnected mechanisms

manifest differently among distinct groups: individuals directly impacted by a terrorist attack versus those residing in the same city but unaffected by the incident.

By exploring the interplay of religiosity, resilience, and locus of control among those affected by terrorist attacks, this research aims to provide insights into psychological dynamics that foster positive and adaptive responses to trauma. The findings can advance our theoretical understanding of these psychological factors and guide interventions and support systems, ultimately promoting improved mental health outcomes for those directly impacted by such events.

Objectives

1. To differentiate between APS victims and the general population on religiosity, resilience, and locus of control scale.
2. To find inter-scale correlations between resilience, religiosity, and locus of control.

Hypotheses

1. Army Public Schools afectees will score high on religiosity scale as compared to general population.
2. Army Public School afectees will score high on resilience scale as compared to the general population.
3. Religiosity, locus of control, and resilience scales will be positively correlated.
4. Army Public School affectees will score higher on the locus of control scale than the general population.

Method

Research Design

This study aimed to compare responses between individuals affected by the Army Public School (APS) incident and the general population regarding religiosity, resilience, and locus of control. To achieve these objectives, a cross-sectional comparative research design was employed. This design allowed us to gather data from two groups and make meaningful comparisons.

Sample

The study included a total of 206 participants, categorized into two groups:

APS Affectees: This group comprised 103 individuals directly affected by the APS incident. Among them, there were 70 students (34%), 25 teachers (12%), and 25 parents (12%). Inclusion criteria for APS affectees were as follows: they had either experienced the loss of a loved one, suffered a personal injury or injury to a loved one, or had directly witnessed the incident.

General Population: The comparison group comprised 103 individuals from the general population, which included students, teachers, and parents.

Sampling Technique

A purposive sampling technique was employed to select participants from the APS affectee group. This technique ensured that individuals with direct exposure to the APS incident were included, either through personal experience or witness.

Similarly, to form the comparison group from the general population, we used purposive sampling by matching the general population to the APS group based on pertinent variables, such as age, gender, and class. This approach ensured that the two groups were comparable regarding these variables.

Instruments

State-Trait Resilience Inventory

The State-Trait Resilience Inventory, originally developed by Hiew in 2000, was utilized in this study. The translated inventory version (Sarwer, 2005) assessed resilience. This inventory comprises two subscales: State Resilience, which encompasses 15 items, and Trait Resilience, which consists of 18 items. It adopts a Likert-type response format with a 5-point scale ranging from "strongly agree" (weighted as 5) to "strongly disagree" (weighted as 1). Higher scores on both subscales indicate greater resilience. The State Resilience subscale's internal consistency (alpha reliability) is .84, while for the Trait Resilience subscale, it is .93.

Religiosity Scale of Multidimensional Personality Inventory

The religiosity scale of the multidimensional personality inventory (Zeb, 2013) was employed to gauge religiosity. This scale encompasses 62 items and follows a Likert format. Responses are rated on a scale ranging from "strongly agree" to "strongly disagree." The scoring involves assigning weights: "strongly agree" is weighted as 3, "agree" as 2, "mildly agree" as 1, and "disagree" as 0. The scoring is reversed for negative items. This scale was validated using the religiosity scale index (Aziz & Rehman, 1996). The alpha coefficient for this scale is 0.89, while the split-half reliability is 0.81.

Levenson Multidimensional Locus of Control Scale

The present study employed the translated version of the Multidimensional Locus of Control Inventory (Younas, 2003), originally developed by Levenson in 1974. This inventory comprises 24 items presented in a 6-point Likert format. It includes two subscales, each consisting of 8 items measuring internal locus of control, external locus of control, and powerful others. Reliability assessment utilized the Kuder-Richardson reliability coefficient, resulting in r=0.64 for the Internal Locus of Control Scale, r=0.77 for the Powerful Others Scale, and 0.78 for the External Locus of Control Scale. Split-half reliabilities were also calculated, yielding values of 0.62, 0.66, and 0.64 for Internal Locus of Control, Powerful Others, and External Locus of Control, respectively.

Procedure

Initial approval was obtained from the Army Public School authorities for data collection within the school premises and from the relatives of Army Public School victims. The study's purpose was elucidated, emphasizing the confidentiality of the provided information. Upon their consent, participants were provided with questionnaires and consent letters. Data collection from students and teachers occurred in group settings, where participants were seated in a classroom and administered the scales. Students were also encouraged to seek parental participation; contact details were supplied for parental consent. After gathering data from APS affectees, the general population sample was matched to the APS group based on pertinent variables such as age, gender, and class. Data collection from the general population occurred on an individual basis.

Results

Table 1: Descriptive Statistics of State Trait Resilience, External and Internal Locus of Control, and Religiosity Scales

Scales	No of Items	*M*	*SD*	Range	Alpha Coefficient
Resilience	33	118.18	23.6	35-155	0.94
External locus of control	16	82.33	9.96	22-91	0.69
Internal locus of control	8	58.08	5.18	16-48	0.54
Religiosity	62	148.04	20.64	80-176	0.90

Table 1 shows mean, standard deviation, range and alpha coefficient of the study scales.

Table 2: t-Test Comparing APS Affectees and General Population on Religiosity Scale

	Army Public School affectees		General Population				Cohen's
Variable	*M*	*SD*	*M*	*SD*	*t(203)*	*p*	*d*
Religiosity	151.40	20.10	144.71	20.72	2.24	0.01	.32

Table 2 shows difference in religiosity score between Army Public School affectees and general population. Army Public School affectees have high religiosity as compared to general population. The value of Cohen's d (0.32) indicates medium effect size.

Table 3: t-Test Comparing APS Afectees and General Population on Resilience Scale

	Army Public School affectees		General Population				Cohen's
Variable	*M*	*SD*	*M*	*SD*	*t(203)*	*p*	*d*
Resilience	120.91	22.08	115.47	24.82	1.65	0.04	.23

Table 3 manifests that significant difference does exist between APS afectees and general population on resilience, where the afectees show higher mean although the effect size is low.

Table 4 Correlations Between the Variables

	Scales	1	2	3	4
1	Rel	----			
2	Res	0.33**	----		
3	ExtLoc	0.1	0.08	----	
4	IntLoc Control	0.23**	0.41**	0.36**	-----

Note. Rel= Religiosity scale; Res= Resilience; ExLoc=External locus of control; IntLoc= Internal locus of control; **p<0.01,*p<0.05

Table 4 presents the interscale correlations among study variables with religiosity showing significant positive correlations with resilience (r = .33**) and internal locus of control (r =

0.23**) and non-significant correlation with external locus of control. Positive correlation is also sought between Resilience and internal locus of control (r = 0.41**) and a negligible correlation with external locus of control. The subscales of locus of control scale i.e., external and internal locus of control (r = 0.36**, P=0.00) are also positively correlated.

Table 5: t-Test Comparing APS Afectees and General Population on LOC Scale

	Army Public School Affectees		General Population				Cohen's
Variable	*M*	*SD*	*M*	*SD*	*t(203)*	*p*	*d*
Int LOC	35.43	4.95	32.74	5.08	3.82	.001	.53
Ext LOC	83.54	10.55	81.12	9.25	1.74	.041	.24

Table 5 shows the internal and external locus of control score difference between Army Public School affectees and the general population. Army Public School affectees scored higher on internal and external LOC than the general population. The value of Cohen's d (0.53) indicates a high effect size for internal LOC and a low effect size for external LOC.

Discussion

In light of Pakistan's active engagement in the war against terror, it has experienced significant adverse repercussions, particularly manifested through suicide bombings and terrorist attacks, prominently in KPK. Nonetheless, rather than solely fixating on the negative aftermath of these distressing scenarios, exploring the elements that empower individuals to uphold their equilibrium amidst such grave conditions becomes crucial. This study postulated that religiosity, resilience, and locus of control are safeguarding elements during moments of crisis. The dataset is derived from individuals affected by the Army Public School incident on December 16, 2014, and the broader general population residing in the same city.

The first hypothesis of this study posited that significant differences would exist in religiosity between the Army Public School incident affectees and the general population. The findings corroborated this assumption, displaying a notable distinction between the two groups ($t(203) = 2.24$, $p < 0.01$). Various explanations can be put forth to simplify these outcomes; for instance, as explained by Spilka, Hood, and Grouch (1985), religion can function as a form of psychotherapy for individuals experiencing unrest. Religious convictions and practices furnish relief, optimism, and purpose to those grappling with psychological discontent. Engaging in religious customs, prayer, or finding solace in spiritual guidance can serve as coping mechanisms and provide an avenue for emotional support, aiding individuals in navigating their psychological adversities. Empirical research has lent support to this concept, demonstrating that employing religious coping strategies is linked to decreased levels of psychological distress and an enhanced sense of well-being among individuals contending with diverse stressors (Ramirez, Macêdo, Sales, Figueiredo, Daher, Araújo & Carvalho, 2012).

Similarly, Spilka et al. (1985) also contemplated that religion could function as a refuge, affording individuals a haven to conceal psychological challenges or vulnerabilities. This perspective posits that religion offers a secure haven wherein individuals can seek comfort and protection, safeguarding them from external stressors and potential catalysts for psychopathology. While this facet might not address psychological concerns, it can establish a protective barrier, thwarting specific stressors from exacerbating preexisting mental health issues. Though empirical evidence specifically addressing this aspect is limited, research has demonstrated that religiosity is correlated with heightened emotional well-being and elevated levels of life satisfaction (Diener & Emmons, 1984).

Abu-Raiya and Pargament (2015) indicated that religious convictions and practices bestow a sense of purpose, help, and support in challenging times. The notion advocates that individuals exhibiting elevated levels of religiosity are more prone to find comfort in their faith, consequently reducing psychopathology scores. Islamic literature also underscores the importance of religious principles and practices for facing life's adversities. It includes utilizing prayers, practicing patience, and maintaining faith in God to surmount challenges (Ara, 2016). Muslims believe every individual will encounter trials encompassing hunger, illness, and loss of possessions or loved ones. The outcomes of the present study similarly revealed that those who experienced distress scored higher in religiosity than their counterparts, possibly utilizing this as a coping mechanism to acknowledge and bear their losses. Ermakova (2012) has also proposed that religiosity influences health by fostering surrender to God, which in turn mitigates stress levels (See also, Abdel-Khalek,2007; Abdel-Khalek, & Lester, 2012; Holmes & Kim-Spoon,2016; Miller, & Kelley,2005).

The second hypothesis posited notable distinctions in resilience between APS affectees and the general population. The outcomes substantiated this proposition ($t(203) = 1.65$, $p < 0.04$), with APS affectees displaying higher resilience scores than the general population. Resilience Theory underscores individuals' capacity to adapt positively to adversity. Those with elevated resilience scores are better equipped to confront trauma and manifest diminished psychopathological symptoms (Li et al., 2016). Maddi and Khoshaba (2003) elucidate in their resilience theory that resilient individuals possess control, commitment, and challenge, enabling them to navigate catastrophic events.

Consequently, highly resilient individuals register lower psychopathology scores. Diverse studies have probed into resilience, yielding analogous findings that resilience tends to mitigate psychopathology, particularly depression and anxiety (Sharple et al., 2014). The inverse connection between resilience and psychopathology arises from individuals' conviction that, no matter how challenging the circumstance, it is transient and will progressively ameliorate. They can bend without breaking in arduous situations, and even in moments of feeling wrecked, an intrinsic part remains aware that such fragility is not permanent.

As per Dienstbier's (1989) theory of toughness, encountering stressors and the potential for recovery from these stressors can bolster individuals' resilience. This resilience enhancement leads to psychological and physiological transformations, enabling individuals to perceive these stressful circumstances as surmountable rather than overwhelming, facilitating effective coping. Conversely, if an individual is consistently shielded from stressors or persistently exposed to them, the development of resilience may be hindered. Analogous to physical fitness, which thrives through exercise while excessive exertion can be detrimental, cultivating resilience requires exposure to stress, while excessive stress can disrupt its development (Seery, 2011).

According to the theory proposed by Tedeschi and Calhoun (1996, 2004) and Tedeschi et al. (1998), the capacity to respond positively in the face of adversity is termed posttraumatic growth. This process is initiated by a significant life upheaval that profoundly challenges and possibly shatters an individual's understanding of the world and their role within it. As explained by Tedeschi and Calhoun (1996), resilient individuals demonstrate effective adaptation despite hardships. Those who undergo posttraumatic growth are transformed by their encounters with adversity (as cited in Wald et al., 2008).

The third research hypothesis postulated a positive correlation among the three study scales. The results indicated a positive correlation between religiosity and resilience ($r = 0.33^{**}$, $p = 0.00$). These findings suggest that religiosity might fortify an individual's belief system, fostering optimism that events occur for meaningful reasons and providing opportunities for personal or religious advancement (George et al., 2000). Similarly, Lee et al. (2008) discovered a positive correlation between religiosity and resilience.

Eid, Aqahtani, Marwa, Arnout, Alswaelem, and Toaimi (2020) explored the link between religiosity, resilience, and mental health in 329 cancer-stricken individuals. Their outcomes unveiled substantial positive correlations between religiosity and resilience. Equally, a meta-analysis by Schwalm, Zandavalli, Filho, and Lucchetti (2021) confirmed a moderate positive correlation between religiosity and resilience across 34 studies. Likewise, Edara, Castillo, Ching, and Castillo (2021) established that an individual's resilience could be attributed to their belief in the existence of a higher power, particularly among Taiwanese students. A positive correlation between resilience and internal locus of control was also observed ($r = 0.41^{**}$, $p = 0.00$). This correlation could be attributed to the notion that an internal locus of control leads individuals to believe that they alone possess the capability to navigate a given situation, relying on their abilities and skills. This self-reliance contributes to a resilient disposition.

Kurtça and Kocatürk (2020) conducted a study investigating childhood traumas, emotional self-efficacy, and the internal-external locus of control as predictors of resilience. Their regression analysis demonstrated that childhood traumas, emotional self-efficacy, and internal locus of control significantly predicted resilience among university students. Furthermore, a positive correlation was established between emotional self-efficacy, locus of control, and resilience. Additionally, a negative correlation emerged between resilience and childhood traumas. Rajan, Srikrishna, and Romate (2018) researched resilience and locus of control in 57 parents with intellectually disabled children. The results illuminated a significant influence of the parent's locus of control on their resilience, specifically highlighting the contribution of an internal locus of control to their resilience. In a separate study, Norouzinia et al. (2018) investigated medical students and found that resilient students exhibited an internal locus of control. The theoretical relationship between resilience and an internal locus of control can be elucidated from various perspectives. For instance, Rotter's (1966) research has demonstrated that individuals possessing an internal locus of control tend to experience greater empowerment. They believe that their actions can impact outcomes, even during challenging circumstances. This feeling of empowerment aligns with the attributes of resilient individuals who actively engage in problem-solving and take proactive measures to tackle difficulties (Skinner & Zimmer-Gembeck, 2016).

Similarly, the concept of adaptive coping further expounds that resilient individuals employ adaptive coping strategies when encountering hardships. These strategies encompass seeking support, reframing situations, and focusing on personal strengths (Connor & Davidson, 2003). These strategies harmonize with the proactive approach linked to an internal locus of control (Skinner & Zimmer-Gembeck, 2016). Likewise, individuals' attribution styles can also clarify the association between these two variables. Individuals harboring an internal locus of control attribute successes and failures to their actions and decisions (Rotter, 1966). This attribution style fosters a sense of accountability and the belief that they can influence outcomes. During challenging times, this attribution style can contribute to a resilient perspective (Lefcourt, 1982). Additionally, Furnham's research in 2009 emphasizes the role of an internal locus of control in shaping attributional styles.

Our findings also revealed a statistically significant positive correlation between religiosity and internal locus of control ($r = 0.23^{**}$). In contrast, a non-significant correlation was observed between religiosity and external locus of control. It is worth noting that our study comprised a sample of Muslims, and within Islam, a substantial emphasis exists on personal accountability for one's actions. This orientation towards personal responsibility likely contributed to the identified positive correlation between internal locus of control and religiosity. Furthermore, half of our sample consisted of individuals affected by the APS incident. It is plausible that in the aftermath of the event, these individuals became more attuned to their actions and choices, resulting in a significant positive correlation between religiosity and internal locus of control. Interestingly, despite the Islamic belief in destiny that could encourage an external locus of

control perspective, our study demonstrated a non-significant correlation between religiosity and external locus of control.

Further exploring the results of LOC, when the fourth assumption of the study that there is a significant difference between the two groups on LOC was compared, the means of the two groups (see Table 4) showed an intriguing trend. The APS-affected group scored notably higher than their counterparts on internal and external locus of control measures. This pattern can be attributed to their distinct circumstances. Weiner's Attribution Theory (1974) stated that the APS-affected group might have found solace by attributing the calamity to external factors, thus embracing an external locus of control approach as a coping mechanism. The findings are consistent with previous studies. For instance, Bonanno et al. (2004) investigated coping strategies adopted after traumatic incidents. Their findings revealed diverse coping mechanisms employed by individuals to steer the aftermath of trauma, including the tendency to externalize blame. In the context of the APS-affected group, their inclination to attribute the incident to external factors could be interpreted as a strategic response to manage the overwhelming emotions and uncertainties intertwined with the event. Ehring et al. (2008) researched the connection between trauma and the concept of locus of control. Their study unveiled those individuals who had undergone traumatic experiences exhibited a heightened likelihood of demonstrating an external locus of control. This inclination involved attributing outcomes to external influences. This observation resonates with the idea that individuals confronting distressing events, like the APS-affected group, might gravitate towards external attributions as a coping mechanism.

Likewise, the heightened scores of APS affectees on internal locus of control might mirror an increased vigilance over their actions and decisions. As they grapple with the incident's aftermath, they could be burdened by self-blame, questioning decisions such as sending their children to school on that fateful day. As Glasser's Control Theory (1985) proposes that individuals strive for a sense of control over their lives after experiencing trauma, individuals might exhibit higher scores on internal and external locus of control measures. The heightened external locus of control might reflect their recognition of factors beyond their control, while the elevated internal locus might indicate a desire to regain control over their lives. Similarly, Lazarus and Folkman's Cognitive Appraisal Theory (1984) states that individuals assess situations and their resources to cope effectively. The APS-affected group's increased internal locus of control scores might stem from a cognitive appraisal process where they recognize the importance of their actions and decisions in preventing similar incidents. These findings can also be explained concerning Tedeschi and Calhoun's (2004) theory of posttraumatic growth, which posits that individuals who experience trauma can undergo positive psychological changes. The APS-affected group's heightened internal locus of control scores might reflect a renewed sense of personal agency and the desire to prevent similar incidents in the future, contributing to their growth after the traumatic event.

Conclusion, Limitations and Suggestions

Gaining access to the sample of APS affectees proved challenging due to their unwillingness and hesitancy among school authorities. Consequently, a constrained sample was obtained. Notably, the study exclusively encompassed a Muslim sample, constraining the potential for generalizing findings beyond this group. Furthermore, within the APS affectees' sample, only parents were included among the various relatives. Future investigations could expand by studying disasters' impact and coping mechanisms among siblings or other close relations.

References

- Abdel-Khalek, A. M. (2007). Religiosity, happiness, health, and psychopathology in a probability sample of Muslim adolescents. *Mental Health, Religion and Culture*, *10*(6), 571-583.
- Abdel-Khalek, A. M., & Lester, D. (2012). Constructions of religiosity, subjective well-being, anxiety, and depression in two cultures: Kuwait and USA. *International Journal of Social Psychiatry*, *58*(2), 138-145.
- Abdel-Khalek, A.M. (2014). Religiosity and Well-Being in a Muslim Context. In: Kim-Prieto, C. (eds) Religion and Spirituality Across Cultures. *Cross-Cultural Advancements in Positive Psychology*, 9. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-8950-9_4
- Abu-Raiya, H., & Pargament, K. I. (2015). Religious coping among diverse religions: Commonalities and divergences. *Psychology of Religion and Spirituality*, 7(1), 24-33. doi: 10.1037/a0037976
- Almeida, M., Neto., & Koening. (2006). Religiousness and mental health: A review. *Rav Bras Psiquiatr,28*(3), 242-250.
- Ann, J. E., & Bae, S. M. (2022). Moderating Effect of personal and community resilence on the relationhips between disaster trauma, disaster conflict, economic loss and post truaamtic stress disorder. Disstaer medicine and public health preparedens, 17(212).
- Ara, A. (2016). *Knowing Sabr: 7 Quranic Verses about Patience.* Retrieved October 16, 2017 from https://quranicquotes.com/notes/quranic-verses-about-patience/
- Atilola, O., Stevanovic, D., Moreira, P., Dodig-Ćurković, K., Franic, T., Djoric ,A., Davidovic, N., Avicenna, M., Noor, I. M., Monteiro, A. L., Ribas, A., Stupar, D., Deljkovic, A., Nussbaum, L., Thabet, A., Ubalde, D., Petrov, P., Vostanis, P., & Knez, R. (2021). External locus-of-control partially mediates the association between cumulative trauma exposure and posttraumatic stress symptoms among adolescents from diverse background. *Anxiety Stress Coping*. 34(6), 626-644. doi: 10.1080/10615806.2021.1891224.
- Aziz, S., & Rehman, G. (1996). Index of Religiosity: The development of an indigenous measure. *Journel of Indian Academy of Applied Psychology*, *23*(1-2), 79-85.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, *84*(2), 191.
- Benight, C. C., & Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self-efficacy. *Behaviour research and therapy*, *42*(10), 1129-1148.
- Berzengi, A., Berzenji, L., Kadim, A., Mustafa, F., & Jobson, L. (2017). Role of Islamic appraisals, trauma-related appraisals, and religious coping in the posttraumatic adjustment of Muslim trauma survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*, *9*(2), 189.
- Bitsika, V., Sharply, C.F., & Peters, K. (2010). How is resilience associated with anxiety and depression? Analyses factor score interactions within a homogeneous sample. *German Journal of Psychiatry, 13*, 9-16.
- Böttche, M., Kuwert, P., Pietrak, R. H., & Knaevelsrud, C. (2016). Predictors of outcome of an internet-based cognitive-behavioural therapy for post-traumatic stress disorder in older adults. *Psychology and Psychotherapy: Theory, Research and Practice*, 89, 82-96. doi:10.1111/papt.12069
- British High Commission Islamabad. (18 January, 2019). *World news story: APS attack survivor Ahmad Nawaz awarded Points of Light Award.* Retrieved from https://www.gov.uk/government/news/aps-attack-survivor-ahmad-nawaz-awarded-points-of-light-award

- Buddelmeyer, H., & Powdthavee, N. (2015). Can having internal locus of control insure against negative shocks? Psychological evidence from panel data. *Journal of Economic Behavior and Organization*, 122, 88-109. https://dx.doi.org/10.2139/ssrn.2616082
- Carter, L. W., Mollen, D., & Smith, N. G. (2014). Locus of control, minority stress, and psychological distress among lesbian, gay, and bisexual individuals. *Journal of Counseling Psychology*, 61, 169-175. doi:10.1037/a0034593
- Cazan, A. M., & Dumitrescu, S. A. (2016). Exploring the relationship between adolescent resilience, self-perception and locus of control. *Romanian Journal of Experimental Applied Psychology*, *7*(1), 283-286.
- Chen, Z. J., Bechara, A. O., Worthington Jr, E. L., Davis, E. B., & Csikszentmihalyi, M. (2021). Trauma and well-being in Colombian disaster contexts: Effects of religious coping, forgivingness, and hope. *The Journal of Positive Psychology*, *16*(1), 82-93.
- Cherry, K. (2017). *What is the trait theory of personality*? Retrieved on 18 Oct 2017 from https://www.verywell.com/trait-theory-of-personality-2795955
- Cherry, K. (2023). *What Is Resilience? Characteristics of Resilient People*. Retrieved from https://www.verywellmind.com/characteristics-of-resilience-2795062#:~:text=Some%20of%20the%20main%20characteristics,solving%20skills%2C%20and%20social%20support.
- Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and anxiety*, *18*(2), 76-82.
- Crowford, N. C. (2018). Human Cost of the Post-9/11 Wars: Lethality and the Need for Transparency. Watson Institute of International and Public Affairs, Brown University. Retrieved from https://watson.brown.edu/costsofwar/files/cow/imce/papers/2018/Human%20Costs%2C%20Nov%208%202018%20CoW.pdf
- Dafdar, M., Lester, D., & Abdel-Khaleq, A. M. (2021). Religiosity, happiness and suicidal behaviour: a cross-sectional comparative study in Iran. *Mental Health Religion & Culture 24*(1),1-14. DOI:10.1080/13674676.2020.1767554
- Dai, L., Chen, Y., & Lu, Z. (2016). How do religious people cope with stress? An exploratory study in China. Psychology of Religion and Spirituality, 8(2), 156-165. doi: 10.1037/rel0000045
- Daraz U., Naz A. & Khan W. (2012) Sociological analysis of terrorism in Pakistan. *Academic Research International*, 3(1). [Google Scholar]
- Department of Justice Federal Bureau of Investigation Office for Victim Assistance. (n.d). *Coping after terrorism for survivors*. Washington D.C : Federal Bureau of Investigation Office for Victim Assistance. Retrieved from https://www.justice.gov/file/1189156/download
- Edara, I.R., del Castillo, F., Ching, G.S., del Castillo, and C.D. (2021). Religiosity, Emotions, Resilience, and Wellness during the COVID-19 Pandemic: A Study of Taiwanese University Students. *International Journal Environmental Research and Public Health*, 18, 6381. https://doi.org/10.3390/ ijerph18126381
- Eid, N. A. Al., Alqahtani, M. MJ., Marwa, K., Arnout, B.A. , Alswailem, H. S., and Toaimi, Al. A. Al. (2020). Religiosity, Psychological Resilience, and Mental Health Among Breast Cancer Patients in Kingdom of Saudi Arabia. Breast Cancer: *Basic and Clinical Research*. 14, 1–13. doi.org/10.1177/1178223420903054
- Elam, T., & Taku, K. (2022). Difference between posttraumatic growth and resiliency: Their distinctive relashionship with empathy and emotion recognition ability. *Front. Psychol.,Sec. Psychology for Clinical Settings. 13* . doi.org/10.3389/fpsyg.2022.825161

- Ellis, L., Farrington, D. P., Hoskin, A. W. (2019). *Handbook of crime correlates*. Academic Press (Elsevier)
- Faizan, A., Riaz, M. N., & Ali, F. (2019). Relationship between Locus of Control and Depression among Undergraduate Students. *Pakistan Journal of Psychological Research, 34*(2), 341-358.
- Furnham, A. (2009). Locus of control and attribution style. *Handbook of individual differences in social behavior*, 274-287.
- García, F. E., Páez, D., Reyes-Reyes, A., & Álvarez, R. (2017). Religious coping as moderator of psychological responses to stressful events: A longitudinal study. *Religions*, *8*(4), 62.
- Georgescu, D., Duiu, A., Cheiban, T., Mazilu, T., Rotariu, A., Toma, D., & Barangă, A. (2019). The relationship between locus of control, personal behavior, self-efficacy and resilience. *Romanian J Cognit-Behav Therapy Hypn*, *6*(1/2), 1.
- Glasser, W. (1985). Control theory. New York: Harper and Row.
- Hiew, C., Mori, T., Shimizu, M., & Tominaga, M. (2000). Measurement of resilience development: Preliminary result with a stait-trait resilience inventory. *Journal of Learn Curricul Development,1*, 1-9.
- Hjemdal, O., Vogel, P.A., Solem, A., Hagen, K., & Stiles, T.C. (2011).The relationship between resilience and levels of anxiety, depression and obsessive-compulsive symptoms in adolescents. *Journal of Clinical Psychology and Psychopathology*, *18*,314- 321.
- Holmes, C., & Kim-Spoon, J. (2016). Why are religiousness and spirituality associated with externalizing psychopathology? A literature review. *Clinical child and family psychology review*, *19*, 1-20.
- *Julian B Rotter Social Learning Theory.* Retrieved October 1, 2017 from http://study.com/academy/lesson/julian-b-rotter-social-learning-theory-locus-of-control.html.
- Katz, A. (December 26, 2014). *Meet the Young Survivors of the Peshawar School Attack*. Retrieved from https://time.com/3646246/peshawar-pakistan-taliban-students-school-attack/
- Khan, A., Ullah, O., Nawaz, K., Arsalan, Ambreen, and Ahmad, I. (2018). Post-traumatic stress disorder among school children of Army Public School Peshawar after Six month of terrorists attack. *Pak J Med Sci*. 34(3), 525–529. doi: 10.12669/pjms.343.14885
- Khattak, B. (2018). *The role of religiosity, locus of control and resilience in protecting Army Public School affectees (16 December 2014) against Psychopathology*. Unpublished MPhil Thesis. Shaheed Benazir Bhutto Women University, Peshawar, Pakistan.
- Kte'pi, B. (2020). Resilience (psychology). *Salem press encyclopedia*. Hackensack, NJ: Salem Press
- Lazarus, R. S., & Folkman, S. (1984). Appraisal, stress and coping. New York: Springer.
- Lefcourt H. M. (1982) *Locus of control: current trends in theory and research*. (2nd ed.) Hillsdale, NJ: Erlbaum.
- Lefcourt, H. M. (1992). Durability and impact of the locus of control construct. *Psychological Bulletin*, *112*(3), 411.
- Li, S., Stampfer, M. J., Williams, D. R., & VanderWeele, T. J. (2016). Association of religious service attendance with mortality among women. JAMA Internal Medicine, 176(6), 777-785. doi: 10.1001/jamainternmed.2016.1615
- Maddi, S. R., & Khoshaba, D. M. (2003). Hardiness training for resiliency and leadership. *Promoting capabilities to manage posttraumatic stress: Perspectives on resilience*, 43-58. DOI: https://doi.org/10.1017/dmp.2022.170

- Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of experimental social psychology*, *19*(5), 469-479.
- Miller, L., & Kelley, B. S. (2005). Relationships of religiosity and spirituality with mental health and psychopathology. *Handbook of the psychology of religion and spirituality*, 460-478.
- Nawaz, S., Khan, M. J., & Fazaldad, G. (2023). Resilience as Moderator Between Posttraumatic Stress and Suicidal Ideation among Institutionalized Orphans. *Foundation University Journal of Psychology, 7* (2). DOI: https://doi.org/10.33897/fujp.v7i2.270
- Norouzinia, R., Heidari, A., Ahmadi, B, Ahmadi, M. M. (2018). The Relationship between Resilience and Locus of Control in Students of Alborz University of Medical Sciences in 2017. *Sadra Med Sci J*, 6(1) 67-76.
- Rajan, A. M., Srikrishna, G., & Romate, J. (2018). Resilience and Locus of Control of Parents Having a Child with Intellectual Disability. *Journal of developmental and Physical Disabilities*. 30,297–306. doi.org/10.1007/s10882-018-9586-0
- Ramirez, S. P., Macêdo, D. S., Sales, P. M. G., Figueiredo, S. M., Daher, E. F., Araújo, S. M., ... & Carvalho, A. F. (2012). The relationship between religious coping, psychological distress and quality of life in hemodialysis patients. *Journal of psychosomatic research*, *72*(2), 129-135.
- Rizvi, M. A. K., & Hossain, M. Z. (2017). Relationship between religious belief and happiness: A systematic literature review. *Journal of Religion and Health, 56*, 1561-1582.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied*, *80*(1), 1.
- Schwalm F. D., Zandavalli, R. B., Filho, E. D. de. C., and Lucchetti, G. (2021). Is there a relationship between spirituality/religiosity and resilience? A systematic review and metaanalysis of observational studies. *Journal of Health Psychology*, 1–15. Doi:10.1177/1359105320984537
- Seery,M.D. (2011).Resilience: A Silver Lining to ExperiencingAdverse Life Events?*Current Directions in PsychologicalScience,20*(6), 390–394.
- Skinner, E. A., Zimmer-Gembeck, M. J., Skinner, E. A., & Zimmer-Gembeck, M. J. (2016). Ways and families of coping as adaptive processes. *The Development of Coping: Stress, Neurophysiology, Social Relationships, and Resilience during Childhood and Adolescence*, 27-49.
- Spilka, B., Hood, R., W.,&Gorsuch, R.L. (1985).*The Psychology of religion: An empirical approach*. Eaglewood cliffs, NewJersy: Printice-hall.
- Tanielian, T.L., & Stein, B.D. (2014).*Understanding and preparing for the psychological Consequences of terrorism*.Retrieved February 17, 2016 from http//:www.rand.org/content/dam/rand/pubs/reprints/2006/RAND-RP1217.pdf
- Tedeschi R.G., Calhoun L.G. Posttraumatic growth: Conceptual foundations and empirical evidence. Psychological Inquiry. 2004;15(1):1–18.
- *Terrorist attacks on army Army public school Peshawar* (2014). Retrieved April 4, 2017 from Reserchpedia.info/terrorist-attack-on-army-public-school-peshawar
- Tuğba Türk-Kurtça1, T., and Kocatürk. M. (2020). The Role of Childhood Traumas, Emotional Self-Efficacy and Internal-External Locus of Control in Predicting Psychological Resilience. *International Journal of Education & Literacy Studies*. 8(3),105-115.
- Villaini, D., Sorgente, A., Iannello, P., Antonietti, A. (2019). The role of spirituality and religiosity in subjective well-being of invividuals with different religious status. *Psychology for Clinical Settings*, 10,doi.org/10.3389/fpsyg.2019.01525

- Wald, H. S. (2020). Optimizing resilience and wellbeing for healthcare professions trainees and healthcare professionals during public health crises–Practical tips for an 'integrative resilience'approach. *Medical Teacher*, *42*(7), 744-755.
- Weiner, B. (1974). Achievement motivation and attribution theory. Morristown, N.J.: General LearningPress.
- Zaidi, I. H., & Mohsin, M. N. (2013). Locus of control in graduation students. *International Journal of Psychological Research*, *6*(1), 15-20.
- Zeb, R. (2013). Development and standardization of multi-dimensional personality inventory. (Phd Dissertation). Shaheed Benezir Bhutto Women University Peshawar.
- Zhang, W., Liu, H., Jiang, X., Wu, D., & Tian, Y. (2014). A longitudinal study of posttraumatic stress disorder symptoms and its relationship with coping skill and locus of control in adolescents after an earthquake in China. *PLOS ONE*, 9, 1-7. doi:10.1371/journal.pone.0088263