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Efficacy of Training Workshops on Perceived Academic Stress and Test Anxiety: A Post-Pandemic Study on Adolescents

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ABSTRACT

Purpose: The study investigated the post-pandemic effectiveness of training workshops on the levels of perceived academic stress and test anxiety and to understand the relationship between test anxiety and perceived academic stress.

Methodology: A pre-post experimental design was used in the study. 145 students (males = 55, females= 90), aged 13-19 years from secondary school, were divided into four groups, and each group was given two days of training workshops separately. Perceived Academic Stress Scale and Westside Test Anxiety Scale were used.

Findings: The results obtained by SPSS 22, indicated a moderate positive correlation between perceived academic stress and test anxiety (p-value < 0.01).

Unique Contribution to Theory, Policy and Practice: The study opened doors in our culture where educational institutes can take more initiatives to cater to student's mental well-being. The pre and post test anxiety initiative is important to gain insight into student's lives and behavior during examination, this will help create policies suited towards decreasing anxiety in students.

Keywords: *Adolescents, Experimental Design, Post-Pandemic, Test Anxiety*

INTRODUCTION

Stress, mainly perceived academic stress, is defined as the student's response to the requirements of their studies that exceed their capabilities (Wilks, 2008). Frequent stressors regarding academics include oral presentations, tests, being overburdened by work, and being unable to meet deadlines (Alsulami et al., 2018). Due to cultural differences, the stress experienced by Pakistani students stems from a different set of variables. Among Pakistani students, stress stems from pressure to achieve a passing grade, fulfilling familial demands to score high marks, and experiencing homesickness (Rehmani, Khan & Fatima, 2018).

According to a study on undergraduate students, 42% of the students stated that they experienced stress when they were unable to focus on the lecture being taught, 38.6% of the students experienced stress when they were overburdened with tests, and 34% of the students felt stress when they prepared for a test at the last minute. Lack of support from any institution and parents regarding perceived academic stress can lead to extreme circumstances, such as suicidal tendencies (Naseem, Naz & Zehra, 2019). Parental expectations have a highly significant impact on the academic stress perceived by students (Talha, Qi & Rizwan, 2020). The ability to cope with stress was paramount, as students who managed their stress performed better academically than students who did not (Khan, Altaf & Kausar, 2013).

The Anxiety and Depression Association of America (Cherry, 2022) authoritatively perceives Test anxiety as a kind of exhibition of uneasiness, portrayed by apprehension about stepping into examination. Test anxiety (Cherry, 2022) is often the cause of a lot of physical symptoms, such as headaches, sickness, and dizziness, as well as cognitive and emotional symptoms, like sensations of vulnerability and trouble concentrating.

With the lockdown enforced during the COVID-19 pandemic, schools were closed, and classes had to shift to online platforms. The sudden shift towards online classes has negatively impacted learning, where students experienced learning loss (Engzell, Frey & Verhagen, 2021). This was even more pronounced in Pakistan, where most institutions are poorly equipped to conduct online classes (Mumtaz et al., 2020). Additionally, students find online courses to be less interactive, which hinders their ability to learn correctly, and combined with a general sense of isolation from learning behind a screen, and they experience a significant decrease in motivation to learn and attend classes (Adnan & Anwar, 2020; Alawamleh et al., 2020).

A review conducted by Pascoe et al. (2019) found that an increase in perceived academic stress is positively correlated with a decline in mental health, sleep, physical health, and achievement, as well as an increase in substance use and dropout rates. Techniques such as Progressive Muscle Relaxation (PMR) have been proven to have significant short-term effects (Dolbier & Rush, 2012). Moreover, similar techniques, such as the Emotional Freedom Technique (EFT) have been shown to reduce stress and decrease cortisol levels (Bach et al., 2019). Time management

skills have been proven in reducing overload and somatic symptoms while increasing performance and GPA by 0.025 points per extra study hour a week (Lahmers and Zulauf, 2000).

Test anxiety and perceived academic stress, although measured as different phenomena, strongly correlate, Stankovska et al (2018). Research conducted by Harpell & Andrews (2013) on 267 junior and senior high school students concluded a strong correlation between test anxiety and school-based stress and that academic stress is a strong predictor of worry.

Several techniques exist that have been proven to manage and mitigate the effects of stress and anxiety, such as deep breathing (also known as diaphragmatic breathing), which reduces cortisol levels and increases sustained attention and focus among practitioners, as well as improving mental functions and managing anxiety (Nipa et al. 2021). There are two main reasons why college students enroll themselves in therapy, and anxiety is one of them, according to the Centre for Colligate Mental Health Annual Report 2017. American Test Anxiety (2007) sheds light on such statistics more comprehensively. According to them, 16-20 % of students have high levels of test anxiety. At the same time, 18 % have moderate levels of test anxiety.

To manage perceived academic stress, it is integral that institutions organize workshops and seminars for students who are affected by it to enable them to manage emergent perceived academic stressors. Stress management can also be added as a course in the curriculum. Moreover, not much study has been done on secondary school students compared to university students regarding perceived academic stress and test anxiety.

Our study aimed to analyze the significance of training workshops in catering to students' stressors. To find out the correlation between perceived academic stress and Test anxiety. To analyze post-pandemic levels of academic Stress and Test Anxiety.

Methodology

Research Design

A quantitative cause-and-effect research design was used. Our study population was students aged 14-19 years old studying in grades 9, 10, and 11 of private schools in Karachi, Pakistan. This study lasted for 6 months (Nov 2021- Jan 2022). The participants were approached through a purposive convenience sampling technique. This study was conducted in commonly accepted educational settings and followed the Helsinki Declaration's ethical standards. School permissions were taken from all participating schools. The anonymity and confidentiality of all students were guaranteed.

Measures

Demographics Sheet

A demographic sheet was administered at the beginning of a training workshop. The demographic sheet included age, gender, grade, name of the school, birth order, number of

siblings, socioeconomic class, family type (nuclear or joint), means of study (phone, laptop, computer, parent's phone, parent's computer, other), number of hours of study, number of hours of study during tests.

Westside Test Anxiety Scale (Driscoll, 2007)

The Westside Test Anxiety scale is based on a 5-point Likert Scale with ten items, designed by Dr. Richard Driscoll, aimed at identifying students with potentially high levels of anxiety. The scale has high face validity, as the questions seem highly relevant to the test taker.

The Perceived Academic Stress Scale (Bedewy, & Gabriel, 2015)

The Perception of Perceived Academic Stress Scale is based on an 18-item Likert. The Perceived Academic Stress Scale was developed by Bedewy, D. and Gabriel, A. to psychometrically assess the levels of perceived academic stress in students of different ages. The internal consistency reliability (Cronbach's alpha) was 0.7 for the 18 items of the PAS.

Procedure

Permission was given to conduct the training workshop for secondary students. All of the training workshops were carried out in four separate sessions consisting of different numbers of students from three other schools. Each workshop lasted for 90 minutes each day over two days, targeting the student's perceived academic stress and test anxiety. They were asked to fill out the demographic form and were given two questionnaires to test their current perceived academic stress and anxiety levels. On the first day of the training workshop, the students were taught positive self-statements or self-affirmative statements motivational strategies; they were also given a time management matrix and taught Eye Movement Freedom Technique to release their immediate stress by happily tapping their stressors away. On the second day of the workshop, the researchers made the students practice mindfulness and progressive muscle relaxation, and the workshop ended with a balloon activity. The same questionnaire was asked to be filled out again by the students on the second and last day of the workshop to measure the effectiveness of the training workshop. A feedback form was given to the students at the end of the workshop.

***Inclusion Criteria*:** Students aged between 14 and 19 years old, 9th, 10th, and 11th-grade students, private school students.

Exclusion Criteria: Students in an undergraduate or postgraduate program, government schools.

The data was analyzed using descriptive statistics (mean, SD, confidence interval, degree of freedom), bivariate correlations, and paired sample T-test of Perception of Academic Stress Scale and Westside Test Anxiety Scale through SPSS 22. All analyses comprised of data from the pre-tests and post-tests.

Strategies/Techniques Used in Training Workshop

DAY 1			
Activity Number	**Objective**	**Activity Description**	**Student Feedback**
Common Activity	Lowered physiological adverse effects of stress hormone (cortisol).	Diaphragmatic Breathing: The students were asked to inhale air through their noses. Their hands were placed on their bellies to let the air into the stomach. Afterward, the air was gently exhaled through the mouth. This activity was adopted in multiple activities during the two days of the workshop.	"The workshop was extremely effective in relieving our stress."
1	Reduced perceived academic stress	**Self-Affirmations:** A set of customized positive self-statements were taught to the students, and they were instructed to experiment with these statements and say them daily to increase their belief in themselves.	"I got to learn how to relieve stress by doing various exercises."
2	Prioritize tasks and avoid procrastination.	**Time Management Matrix:** A copy of the time management matrix was provided to the students, after which they were asked to come up with various situations they may experience daily and place them in the sections according to their importance.	"They should arrange these stress-relieving activities every once in a while."
3	Motivate students to initiate productive behavior.	**Motivational Strategies:** The Butt-Rebuttal Method was used and taught to students so that they question their actions and find the value of their work.	"I am interested in attending more of them. It will for sure help the youth dealing with stress."

4	Focus on distressing thoughts, rate them, and establish a positive phrase.	**Eye Movement Freedom Technique Program:** It was developed after the supervisor's approval and was based on previous literature. The tapping sequence involved tapping with two fingers on the nine meridian points. It was used as a stress management tool.	"The happy tapping activity really helped me."
DAY 2			
Activity Number	**Objective**	**Activity Description**	**Student Feedback**
1	Grounding exercise to break the loop of negativity that surrounds students while studying/ during their tests	**Mindfulness** involves being in the moment, feeling and sensing what is happening around you without interpretation. The process consisted of 4 stages: Pause, Breathe, Notice, and Redirect.	"I learned a great deal of new methods and ways to counter my anxiety. It was pretty fun, too." "Overall, I would give this workshop a 10/10 as it really helped me release stress." "The trainers were very friendly and helpful to us; they were present to clear our ambiguity".
2	Release physical tension by tensing and relaxing muscles of the body	**Progressive Muscle Relaxation (PMR):** The activity started with breathing diaphragmatically a couple of times to bring the students into a relaxed state, after which the muscles of the body were tensed for 3 seconds and then relaxed again.	"Very informative and helpful and right on time before tests everything was explained clearly." "I would love to attend more workshops like these in future as I learned some very great new things here."
3	Instill the idea that they can always do something fun	**Balloon Activity:** The students were given balloons, which they had to fill and then pop in whatever way they wanted. The premise of this activity	"I felt that some of the stress has been released especially after balloon activity."

	if they feel anxious.	was to make the students realize that they now have the necessary skills to cope with stress. However, they can always do something fun if they still feel overwhelmed.	"We would like more of these workshops in our school during peak test seasons". "The presenters were very good. Only thing I can think of is that the workshop should be longer as you guys are amazing."

Results

Table 1

Descriptive statistics and the bivariate correlation between Perceived Academic Stress and Test Anxiety after the workshop

Variables	Pre-test		Post-test		95% confidence interval		T	df	p
	M	SD	M	SD	LL	UL			
PAS	59.54	6.453	60.49	6.646	-2.531	0.642	-1.77	144	0.241**
TA	32.28	8.188	32.74	8.042	-2.531	1.621	-0.433	144	0.665**
R	0.440*		0.558*						

Note:*p <0.01, **p <0.05, M=Mean, SD, Standard Deviation, LL= Lower Limit, UL=Upper Limit

Table 1 displays descriptive statistics and the bivariate correlation between Perceived Academic Stress and Test Anxiety after the workshop. The correlation between both variables is statistically significant at p-value < 0.01, whereas the paired sample t-test between pre-test and post-test Perceived academic stress, and pre-test and post-test Test Anxiety was at p-value <0.05.

Socio Demographic characteristics of the participants

Table 2

Table 2 shows the various sociodemographic characteristics of the participants, gender distribution among the participants (N=145), was female students (N=90, 62.1%) which made up more than half of the total number of participants as compared to male students (N=55, 37.9%). Just over half of the students were 15years of age (N=74, 51.4%), followed by 16-year-old students making over 1/3rds of the total number of participants (N=52, 36.1%). Most of the participants (N= 59, 40.7%) of the participants have 2 siblings, 1 sibling (N=30, 20.7%), 3 siblings (N= 25, 17.2%), 4 siblings (N= 15, 10.3%), 5 or more siblings (N=9, 6.2%) followed by

students with no siblings (N=7, 4.8%). Most of the students were 1st born (N=55, 37.9%), with 2nd born students (N=34, 23.4%) followed closely by 3rd born students (N=30, 20.7%). 4th born students (N=12, 8.3%) were followed by 5th or more (N=8, 5.5%) born students. Lastly, only 4.1% of the students are the only child (N=6) of their parents. The majority of the participants (N=145) lived in nuclear families (N=100, 69%) as compared to joint families (N=45, 31%). Most of the participants (N=143) come from middle-class households (N=88, 61.5%) with upper-middle class households (N=51, 35.7%) coming in second. Students coming from upper-class (N=3, 2.1%) and lower-middle (N=1, 0.7%) made up a minority of the study population. The majority of the participants (N=145) were enrolled in the 10th grade (N=97, 66.9%), with 11th grade students (N=47, 32.4%) coming in second. Only one student was from the 9th grade (N=1, 0.7%).

Table 3: Behavioral characteristics of the participants

The number of participants (N=144) are almost evenly distributed between students who take tuition or coaching classes (N=70, 48.6%) and students who study at home (N=74, 51.4%). Participants (N=145) who use one electronic device belonging to them for purpose of studying (N=66, 45.5%) are followed by those who use more than one devices (N=58, 40%), with students who don't use any devices of their own (N=21, 14.5%) coming in last. Participants (N=145) are nearly evenly distributed in hours studied on regular days, with students who study for 0-1 hours(N=11, 7.5%), followed by students who study for 1-2 hours(N=36,24.8%) being followed by students who study for 2-3 hours (N=49, 33.8%) being followed by those who study for 3-4 hours (N=36, 24.8%) followed by students who study for 4-5(N=9,6.2%) followed by students who study for more than four hours (N=4, 2.8%). The number of participants (N=145) who study for 6-7 hours during tests (N=54, 37.2%) make up the majority of the population followed by students who study for 4-5 hours (N=27, 18.6%).

Table 4: Cronbach Alpha of Study Variables

Variable	Items	α	M	SD	SK	K
Pre_PAS	18	0.781	59.54	6.453	0.010	-0.026
Post_PAS	10	0.751	60.49	6.646	-0.135	0.009
Pre_TA	18	0.830	32.28	8.188	0.087	-0.748
Post_TA	10	0.845	32.74	8.042	-0.074	-0.099

Note: α = Cronbach alpha, M = Mean, SD = Standard Deviation, SK = Skewness, K = Kurtosis

Table 4 shows Cronbach's alpha of all the study variables. Data reveals that all the scales and subscales have good reliability of α = 0.7 to 0.8 which indicates acceptable to good range and internal consistency. Furthermore, the other factors that are included in the descriptive statistics are mean and standard deviation. The normal distribution of data is represented by values of skewness and kurtosis. According to the criteria as given by George and Mallery (2010),

Gravetter and Wallunau (2014), values of skewness and kurtosis must lie between +2 and -2 to consider that the data is normally distributed and all the values are under this range, therefore parametric tests are used in this study.

Table 5: Descriptive Statistics and Paired Sample t-test of PAS before and after intervention

Variable	M	SD	Mean Difference	T	df	P
Pre_PAS	59.54	6.453	-0.944	-1.177	144	0.241
Post_PAS	60.49	6.646				

Note: M = Mean, SD = Standard Deviation, t = T Statistics, df = Degree of Freedom, p = significant value

Table 5 shows descriptive and paired sample t-test statistics of Perceived Academic Stress. On average, Perceived Academic Stress before intervention was (M = 59.54, SD = 6.453) than after intervention (M = 60.49, SD = 6.646). This difference, -0.944 was statistically insignificant, t (144) = 0.241, $p < 0.05$.

Table 6: **Descriptive Statistics and Paired Sample t-test of Test Anxiety before and after intervention**

Variable	M	SD	Mean Difference	T	df	P
Pre_TA	32.28	8.188	-0.455	-0.433	144	0.665
Post_TA	32.74	8.042				

Note: M = Mean, SD = Standard Deviation, t = T Statistics, df = Degree of Freedom, p = significant value

Table 6 shows descriptive and paired sample t-test statistics of Test Anxiety. On average, Test Anxiety before intervention was (M = 32.28, SD = 8.188) than after intervention (M = 32.74, SD = 8.042). This difference, -0.433 was statistically insignificant, t (144) = 0.665, $p < 0.05$.

Discussion

Our findings suggest a positive correlation between test anxiety and perceived academic stress. A large body of literature supports this; for instance, in a study (Xiao, 2013) conducted on Chinese High school students, it was found that test anxiety and academic stress are positively correlated and that both factors are negatively correlated by academic performance with perceived support being the most critical moderating factor. (Harpell & Andrews, 2013) Measured students' stress correlating with test anxiety in students aged 12-19. A significant positive correlation (Khan et al.,

2019) was also found in a study on university students in Pakistan. They found that academic stress was a strong predictor of test anxiety. Perceived academic stress and test anxiety correlate with each other (Stankovska, et al, 2018).

However, we found no significant change post-intervention. There could be numerous reasons why there were average values; an ailing element is that the students involved in the training workshop might not have faced any parental pressure. According to a correlational research, the higher the parents' expectations are, the higher a student's perceived academic stress (Talha et al., 2020). Similarly, parental anxiety affects the academic stress levels of students at a secondary level (Hafeez et al., 2022). Thergaonkar & Wadkar, (2007) conducted a study about the impact of parenting style on test anxiety. The results showed that if a parent follows a democratic style of parenting, which includes guiding a child's development through cooperation and mutual respect, the children are more likely to face lower levels of test anxiety. Another study (Malakar, 2018) showed that the test anxiety students faced was significantly less in parents who adopted an authoritative parenting style as compared to an authoritarian parenting style. We believe our study might have included students whose parents followed a democratic parenting style. On the other hand, students living in nuclear families generally have a slightly better EQ than those living in joint families (Ronad & Mathias, 2021). The current study also found that 69% of participants belong to nuclear families.

Most of the students who participated in this workshop belonged to middle- and upper-class families, their parental expectations and academic stress could be lower. Similarly, research done in Khyber Pakhtunkhwa (Suleman et al., 2014) revealed that a parent's socioeconomic status did affect their child's academic achievements.

In our study, the general levels of test anxiety were only mildly elevated. The interventions were conducted in three different schools at slightly different times, where the tests were not due for another three months. (Edwards, et al., 2010) conducted a study on the test anxiety of nursing students at different times in their semester and found that test anxiety is significantly higher weeks before a test than at various times during the semester. Additionally, the feedback from supports this statement. One student stated, "We would like more of these workshops in our school during peak test seasons." Hence, students may experience increased levels of test anxiety during peak test season.

A descriptive study (Diaconescu, 2018) showed that academic pressure, resilience, and teacher support are vast indicators of students' academic performance; hence, if a student receives adequate support from his teachers and have healthy friendships, they can perform better academically and psychologically. This factor may also have changed the outcome of the training workshop. A potentially overlooked factor that may have played a vital role in affecting the results of our study can be the disinterest of the students in the workshop, as quoted by a student in the feedback form, "I like the effort put into the workshop and how they handled the students despite their obvious

disdain for anything being told." This statement shows that most of the students had little intrinsic motivation and they displayed a general lack of interest. This is further supported by a study done by the University of Sindh, Jamshoro, (Mahesar, et al., 2020) which states that a student's personal motivation, will and commitment is an essential factor for their interest in their studies. Some statements of students from the feedback form such as "It was not boring for a single second and the students were continuously interacting with the teachers." "The workshop was very different and unlike all academic ones I've attended in the school. It was clear regarding its motive and much needed during this stressful time." "The workshop was pretty helpful and the way of teaching of the teachers made it extremely easy and fun to understand." shows that the lack of students' interest in the workshop was personal and intrinsic and not due to the researcher's way of communicating or delivering the training workshop.

During COVID-19, there were a variety of factors that contributed as being protective factors for students. (Li, 2021) measured the test anxiety of students against perceived social support, uncertainty, and coping styles. There was a strong negative relation between test anxiety and perceived social support as well as coping styles. This indicates that many students may have developed a strong sense of social support during the pandemic. Since the advent of COVID-19 and lockdown, schools across the globe have introduced additional strategies to improve coping strategies and increase support (Pengelly, 2021) found that teachers provided a higher level of support during COVID-19.

We also believe the size of the group might have affected the results of the study. The interventional study groups were between 35-60. (Mullen, 1983) posits that people pay less attention as the group size increases and group size is inversely correlated with 'inappropriate' behaviors. (Kooloos, 2011) showed that students rated higher levels of perceived participation in smaller groups up until 5. Nichols, & Maner, (2008), amongst other studies show that when the participants knew the purpose of the study, they tended to exhibit behavior that they considered correct. Moston, S. (1990) conducted a study where potential suggestibility and deeming a certain answer to be in line with 'normal' behavior changed the answers to certain questions.

One of the limitations that we faced was the increased hurdles in gaining access to students due to COVID-19 restrictions. Many students were reluctant to give their full attention in the presence of their peers. Moreover, the study included participants from Lower Middle-class, Middle-class to Upper Middle-class.

Recommendations

It is recommended that participants from other socioeconomic statuses could also be represented. A few roads of future work are conceivable, remembering assessment of the adequacy of relaxation strategies for undergrad versus the graduate understudy population, minority groups, and older people with health issues. Additionally, it is also recommended to do a screening test and only

include students suffering from high anxiety or stress, so that the result found statistically does not get affected by the normal populace.

Conclusion

The study provided evidence that a correlation exists between perceived academic stress and test anxiety and both variables are dependent on each other. However, statistically, there was no significant difference between the pre-post test scores of Academic Stress and Test Anxiety. For further investigation, a smaller group sizes can be enrolled, and future studies may benefit if the gap between pre- and post-testing is at least 30 days to assess the effectiveness of the techniques. Moreover, future practitioners can conduct research close to examinations.

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