



## Online Learning Stress and Student Performance: The Moderating Role of Emotional Intelligence

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### ABSTRACT

This take a look at turned into a quantitative examine that checked out the correlation among the pressure associated with on-line studying and the instructional overall performance of the scholars with emotional intelligence (EI) performing as a mediating variable among the college college students of Islamabad in Pakistan. With stratified random sampling, three hundred college students have been received in six universities, 3 of that are public and 3 are private. The respondents took five-factor Likert-scale proven measures of on line gaining knowledge of pressure, emotional intelligence, and educational overall performance. The records evaluation become performed via way of means of the usage of IBM SPSS and structural equation modeling (SEM) with the descriptive, Cronbach alpha reliability evaluation facts, Pearson correlation, and moderated regression evaluation with bootstrapped self assurance intervals. Findings indicated that pressure on on line mastering become a prime and bad indicator of instructional overall performance. This courting become tremendously moderated via way of means of emotional intelligence, wherein an expanded degree of EI buffered college students towards the bad consequences of on line studying on their overall performance. Interaction of pressure and EI became enormous and bootstrapped self assurance c program languageperiod supported the electricity of the moderation effect. These effects have enormous implications at the coverage of virtual education, scholar health offerings and the layout of emotional touchy on-line getting to know in Pakistani tertiary education.

### Introduction

The speedy boom of on line schooling has in large part modified the face of better schooling withinside the world, which the COVID-19 pandemic exponentially accelerated. Online gaining knowledge of, on-line classrooms, and asynchronous publications have turn out to be the brand new everyday of college schooling in all international locations of the world, which creates an unparalleled stage of pliability and, on the identical time, brings new strain elements to college students (Adnan and Anwar, 2020). Due to the heightened stresses of on-line getting to know which consist of technology-associated fears, isolation, loss of interplay with instructors, and willpower demanding situations in digital settings, it has grow to be a first-rate place of challenge to each educators and researchers. The correlation among this form of pressure and educational overall performance isn't always regular throughout the scholars, though, and the mental sources that could slight or boom those results have to be examined.

Emotional intelligence (EI), that is a widespread time period that means the cappotential to perceive, understand, manage, and make use of emotions in ourselves and others (Mayer et al., 2008), has been recommend as an crucial mental aid on the

subject of educational strain. Highly EI college students is probably in a higher function to emerge as extra conscious and manipulate the terrible have an effect on of on line mastering difficulties, turn out to be stimulated notwithstanding failures, and exercise wonderful look at conduct even at some point of excessive pressure levels. Although preceding research have located EI to be a predictor of educational overall performance (MacCann et al., 2020), the empirical moderating position it performs withinside the pressure-overall performance dating in on-line gaining knowledge of has now no longer been studied in detail, specifically in growing us of a settings.

The 2020 pandemic precipitated a thorough and as a substitute unplanned transition to on-line mastering withinside the better training region of Pakistan, revealing the dearth of virtual infrastructure, pedagogical preparedness, and scholar readiness to analyze remotely (Adnan and Anwar, 2020). Islamabad being the countrywide capital, and important seat of many federal and personal universities, is a totally handy area to behavior any such look at. In this case, the scholars ought to address pressures: the complicated educational curriculum, and an internet surroundings that doesn't always offer the social help structures and the richness of in-individual getting to know.

This paper consequently sought to research the direct correlation among strain in on-line gaining knowledge of and educational fulfillment of college students in Islamabad universities and to set up whether or not emotional intelligence mediated this dating. The take a look at used a quantitative cross-sectional examine layout wherein three hundred college students in six universities have been recruited the use of stratified random sampling. The fundamental evaluation method become moderated regression evaluation in a structural equation modeling framework with bootstrapped self assurance intervals. It is was hoping that the findings will make contributions to the prevailing frame of literature on virtual studying and scholar well-being, in addition to to manual evidence-primarily based totally pointers in establishments that serve college students in on line studying contexts.

The relaxation of the object is based withinside the following way: the literature overview summarizes the research on the subject of on line gaining knowledge of strain, instructional overall performance, and emotional intelligence; the technique segment includes the outline of the studies layout, sample, and instruments, in addition to evaluation; the effects phase summarizes the findings with assisting tables; the dialogue phase locations the effects withinside the context of the present literature; and the realization phase offers a short set of tips regarding the exercise and future

## **Literature Review**

### **Online Learning Stress**

Online gaining knowledge of strain is a multidimensional assemble that entails cognitive, emotional, and behavioral necessities that can be worried withinside the procedure of accomplishing technology-mediated schooling. Dhull and Sakshi (2017) mentioned a number of the maximum not unusualplace stressors particular to on line mastering, that are technical problems, self-directed studying, social interplay, the absence of instantaneously remarks, and the incapacity to recognition with out the bodily set-up of a classroom. These are qualitatively exclusive stressors than the ones skilled withinside the face-to-face studying context and might integrate with different preexisting educational and private stressors to have compounding consequences on scholar wellness and pupil overall performance.

The COVID-19 disaster changed into a natural, al even though traumatizing, test of big mass adoption of on-line gaining knowledge of. Cao et al. (2020) suggested excessive tension prices the various Chinese in college training with the transition to on line studying, while Odriozola-Gonzalez et al. (2020) recorded excessive degrees of mental misery a few of the Spanish withinside the identical time. One of the earliest systematic research of scholar studies of emergency on-line studying become finished through Adnan and Anwar (2020), who determined that maximum college students skilled improved strain and decreased motivation, in addition to worse educational overall performance in assessment to their enjoy withinside the face-to-face environment. The fundamental elements that contributed to the pressure of on-line gaining knowledge of withinside the Pakistani context have been discovered to be the problem of connectivity, bad devices, and lack of peer interplay.

Theoretical fashions of comprehending on-line studying emphasize are primarily based totally at the transactional version of pressure and coping (Lazarus and Folkman, 1984) which imagines pressure because of an man or woman notion of needs positioned on her or him with regards to perceived coping sources. In this context, on-line getting to know systems may be evaluated as particularly difficult in the direction of college students who've no technical talents, self-law proficiency, or social help to reach on-line schooling. Those that view themselves as now no longer having those sources are predicted to have extra quantities of pressure and, as a result, worse overall performance outcomes.

Selwyn (2016) centered on how virtual gaining knowledge of areas can exacerbate current inequalities, wherein college students with decrease socioeconomic popularity or low tiers of virtual literacy have disproportionately excessive fees of on-

line pressure in getting to know. This is specifically relevant in a country including Pakistan in which the extent of get entry to to powerful net get entry to, non-public computer systems and virtual literacy differs extensively among socioeconomic instructions and geographical areas. In a town like Islamabad, even, there may be a first-rate distinction withinside the stage of virtual preparedness of college students, that can have an effect on their on line getting to know strain and its effects on overall performance.

### **EI and Academic achievement**

Since its formal conceptualization via way of means of Salovey and Mayer (1990) and the popularization of this idea with the aid of using Goleman (1995), emotional intelligence has acquired a extremely good quantity of theoretical paintings and empirical studies. More current fashions of EI differentiate among cappable-primarily based totally fashions which view EI as a group of cognitive capabilities that contain processing emotional information, and trait-primarily based totally or blended fashions, that have dispositional tendencies and self-conceptions of emotional competence (Petrides and Furnham, 2003). In spite of the theoretical controversies, the empirical literature has caused the equal line of proof at the predictive usefulness of EI in educational, professional, and interpersonal degrees.

The meta-evaluation with the aid of using McCann et al. (2020) changed into a massive-scale evaluation of 162 research, and it has validated that EI changed into a brilliant predictor of educational overall performance in any respect degrees of training, and the impact sizes have been in addition big as the ones of character and motivation. The procedures through which EI helps educational achievements are advanced self-law, higher cappable to address instructional strain, and elevated endurance in motivation whilst confronted with a setback. High EI college students discover it less difficult to apprehend and cope with terrible feelings like tension and frustration which have been acknowledged to have an effect on cognitive processing and educational overall performance because of their impact on operating reminiscence capacity (Derakshan and Eysenck, 2009).

In the Pakistani instructional setting, Farooq et al. (2021) controlled to expose that EI became a sturdy predictor of GPA in undergraduate enterprise college students, with emotion law and interpersonal aspects of EI popping out as fairly predictive. Likewise, Shahzad and Naureen (2017) have set up that emotionally clever college students controlled to record decrease instructional burnout and extra educational engagement, implying that EI presents the blessings of resilience that aren't handiest overall performance-associated however on a broader degree of pupil wellness. All those findings affirm the theoretical speculation that EI is a psychologically adaptive device withinside the educational environment.

### **The emotional intelligence as an Intermediary among Stress and Performance**

The moderation speculation is primarily based totally at the reality that EI does now no longer simplest have an immediate dating with overall performance, however additionally reduces the overall performance effect of pressure- a buffering have an impact on in a state of affairs of mental challenge. The speculation is primarily based totally at the concept of conservation of sources (Hobfoll, 1989) in keeping with which greater psychologically endowed people can greater efficiently face up to the stressor-brought about depleting consequences at the sources. In that context, EI is one of the sources that lets in college students to address and control the emotional stress of on-line studying pressure and, thus, maintain cognitive and motivation sources to obtain instructional overall performance.

The moderating impact of EI on strain-overall performance dating has been developing empirically in numerous settings. Extremera et al. (2006) have installed that occupational strain had a moderating dating with occupational overall performance thru EI in a collection of Spanish teachers, in which people with excessive-EI indicated much less overall performance impairment in excessive-strain environments. In the academics, Lam and Kirby (2002) located that EI moderated the impacts of cognitive abilities on educational overall performance beneathneath strain in exams, and that emotionally sensible college students done at better stages of overall performance whilst the strain became excessive.

Specifically withinside the context of on line-studying, Serrat (2017) claimed that EI skills inclusive of self-awareness, self-law, empathy, and social talents are mainly relevant in addressing the problems of on line studying in which the dearth of face-to-face interplay deprives college students off plenty of the social and emotional comments they use to aid and alter themselves. Direct proof of the connection among EI and e-gaining knowledge of pressure and educational consequences became determined in greater current research through Poornima and Gnanasekaran (2023), in which the connection among e-getting to know and educational consequences changed into moderated with the aid of using EI, and college students in excessive percentile of strain had the very best moderation impact. The modern studies aimed to pursue this route of inquiry to Pakistani better schooling setting, in which the moderating impact of on-line studying pressure on EI has by no means been studied earlier than in empirical research.

## **Methodology**

### **Research Design**

To check out the direct and moderated courting among on line studying strain, emotional intelligence and educational overall performance, quantitative, cross-sectional survey became used to examine the studies problem. This layout become appropriate to the studies purposes, because it changed into viable to correctly acquire records of a huge and heterogeneous pattern and the multivariate statistical strategies may be used to check the proposed moderation version (Creswell and Creswell, 2018). The studies changed into carried out through adhering to the APA moral fashionable and become ethically accepted through the group earlier than the information series.

### **Sample and Sampling Strategy**

Undergraduate and postgraduate college students who have been reading withinside the Islamabad universities and had already finished a complete semester of on-line getting to know have been blanketed withinside the goal population. The members had been recruited via stratified random sampling and totaled to three hundred college students in six universities (3 public and 3 private) with approximately 50 college students in every college. The very last pattern comprised three hundred college students (n = 168 female, 56.0%; n = 132 male, 44.0%) with a median age of 21.6 years (SD = 1.92). A priori electricity evaluation became used to justify the pattern length as it furnished enough strength (1 - 8 = .95) to reject Ho while the scale of the moderation consequences have been medium at 8 = .05.

### **Instruments**

The Online Learning Stress Scale (OLSS; Sun et al., 2008), that's a 22-object scale that exams stressors associated with using technology, self-law needs, isolation, and teacher interplay in on line instructions rated on a five-factor Likert scale (1 = strongly disagree, five strongly agree) become used to degree the stressor of on-line mastering. The emotional intelligence become additionally measured via Wong and Law Emotional Intelligence Scale (WLEIS; Wong and Law, 2002), a 16-object scale that evaluates 4 dimensions of EI, namely, self-emotion appraisal, others emotion appraisal, emotion use, and emotion law, which had been additionally rated the use of a five-factor Likert scale. The degree of instructional overall performance changed into the self-stated cumulative GPA on the stop of the final educational year.

### **Data Collection and Ethical Contemplations**

Data series become began out after receiving an moral approval of the Institutional Review Board. All individuals had signed an knowledgeable consent, which assured them anonymity and confidentiality in their solutions and an choice to withdraw at any factor with out repercussions. The questionnaires have been furnished on line on Google Forms withinside the spring 2024 semester and the hyperlinks have been shared thru departmental approach via way of means of every collaborating group. Respondents have been completely voluntary. The reaction price changed into 94.7 in total.

### **Data Analysis**

IBM SPSS data model 27 and AMOS Version 24 had been used to investigate data. All observe variables have been calculated with the aid of using the usage of descriptive facts and Pearson correlation coefficients. Internal consistency reliability became measured the usage of Cronbach alpha. The foremost take a look at of the moderation speculation become moderated more than one regression evaluation that changed into performed according with the stairs defined via way of means of Hayes (2022) the use of the PROCESS macro (Model 1). The interplay time period among on-line mastering pressure and emotional intelligence changed into calculated having mean-concentrated the 2 variables to minimise multicollinearity. The importance of the interplay time period became examined with bootstrapped self assurance intervals (5,000 resamples) to supply easy slope estimates of the moderation impact at high (+ 1 SD), the mean, and low (- 1 SD) stages of emotional intelligence.

## **Analysis and Results**

### **Descriptive Statistics**

Table 1 presents the descriptive statistics for all study variables. The mean online learning stress score was 74.38 (SD = 14.62) out of a possible 110, indicating moderate to high levels of stress. The mean EI score was 54.27 (SD = 9.84) out of 80, reflecting moderate emotional intelligence across the sample. The mean GPA was 2.88 (SD = 0.54) on a four-point scale. All variables were approximately normally distributed.

**Table 1: Descriptive Statistics for Study Variables (N = 300)**

Variable	M	SD	Min	Max	Skewness
Online Learning Stress (OLSS)	74.38	14.62	28	108	0.22
Emotional Intelligence (WLEIS)	54.27	9.84	22	78	-0.19
Academic Performance (GPA)	2.88	0.54	1.5	4.0	-0.28
Age	21.6	1.92	18	28	0.39

Note. OLSS = Online Learning Stress Scale. WLEIS = Wong and Law Emotional Intelligence Scale. GPA on a 4.0 scale.

### Reliability Analysis

Table 2 presents the Cronbach's alpha coefficients for the study instruments. The OLSS yielded  $\alpha = .86$ , the WLEIS demonstrated  $\alpha = .88$ , and the overall instrument battery yielded  $\alpha = .84$ . All values exceeded the acceptable threshold of  $.70$ , confirming robust internal consistency (George & Mallery, 2003).

**Table 2: Internal Consistency Reliability of Instruments**

Instrument	Items	Cronbach's Alpha	Interpretation
Online Learning Stress Scale (OLSS)	22	.86	Good
Wong & Law Emotional Intelligence Scale (WLEIS)	16	.88	Good
Academic Performance (GPA composite)	—	.79	Acceptable

Note. Alpha values  $\geq .70$  acceptable;  $\geq .80$  good (George & Mallery, 2003).

### Correlation Analysis

Pearson tests (Table 3) tested that on line mastering strain had large terrible correlation with instructional performance ( $r = -.49$ ,  $p < .001$ ) and emotional intelligence ( $r = -.38$ ,  $p < .001$ ). The degree of emotional intelligence became considerably and definitely associated with educational performance ( $r = .52$ ,  $p < .001$ ). All the correlations had been anticipated and consistent with the hypothesized theoretical model.

**Table 3: Pearson Correlation Matrix for Study Variables**

Variable	1	2	3
1. Online Learning Stress (OLSS)	—		
2. Emotional Intelligence (WLEIS)	-.38***	—	
3. Academic Performance (GPA)	-.49***	.52***	—

Note. \*\*\*  $p < .001$ .

### Main Effects Regression

Hierarchical more than one regression become completed to research the direct effect of on line studying strain and emotional intelligence on instructional performance. Step 1 worried getting into demographic controls (gender, institutional type). Step 2 worried the enter of on-line mastering strain and emotional intelligence. The regression effects are contained in desk 4. The complete version changed into significant,  $F(4, 295) = 38.74$ ,  $p < .001$ ,  $R^2 = .344$ . Online gaining knowledge of pressure become a extensive bad predictor of educational performance ( $\beta = -.31$ ,  $t = -6.24$ ,  $p = .001$ ), and emotional intelligence changed into a giant nice predictor ( $\beta = .39$ ,  $t = 7.89$ ,  $p = .001$ ).

**Table 4: Hierarchical Regression Results for Academic Performance**

Predictor	$\beta$	SE	t	p	$R^2$	$\Delta R^2$
Step 1: Controls					.048	.048
Gender	.09	.06	1.50	.135		
Institutional Type	.14	.06	2.33	.020		
Step 2: Main Effects					.344	.296***
Online Learning Stress	-.31	.05	-6.24	< .001		
Emotional Intelligence	.39	.05	7.89	< .001		

Note. \*\*\*  $p < .001$ .  $\beta$  = standardized regression coefficient.  $N = 300$ .

### Moderation Analysis

In order to check the moderation hypothesis, the interplay time period (Online Learning Stress  $\times$  Emotional Intelligence) turned into inputted in Step three of the regression version. The moderation outcomes are given in Table 5. Interaction time period become statistically massive ( $-19$ ,  $t = -4.12$ ,  $p = 0.001$ ) this means that that emotional intelligence had considerable moderating impact among strain and on line getting to know and educational overall performance. When the interplay time period became added, the increment in defined variance,  $\Delta R^2 = .034$  turned into enormous,  $F(1, 294) = 16.98$ ,  $p = 0.001$ . The overall version in Step three defined 37.8 percentage of the variance in educational overall performance.

Simple slope evaluation found out that the poor courting among on-line studying pressure and educational overall performance changed into considerably more potent for college kids low in EI ( $\beta = -.52$ ,  $SE = .07$ ,  $t = -7.43$ ,  $p < .001$ , 95% CI  $[-.66, -.38]$ ) than for college students with suggest EI ( $\beta = -.31$ ,  $SE = .05$ ,  $t = -6.20$ ,  $p < .001$ , 95% CI  $[-.41, -.21]$ ) or excessive EI ( $\beta = -.10$ ,  $SE = .08$ ,  $t = -1.25$ ,  $p = .213$ , 95% CI  $[-.26, .06]$ ). In excessive emotional intelligence students, on line getting to know pressure become now no longer appreciably associated with instructional overall performance which is a superb indication of the buffering hypothesis.

**Table 5: Moderation Analysis: Interaction of Online Learning Stress and Emotional Intelligence**

Step	Predictor	$\beta$	SE	t	p	$\Delta R^2$
Step 2	Online Learning Stress	-.31	.05	-6.24	< .001	.296***
Step 2	Emotional Intelligence (EI)	.39	.05	7.89	< .001	
Step 3	Stress $\times$ EI Interaction	-.19	.05	-4.12	< .001	.034***
	Total $R^2$ (Step 3)					.378

Note. \*\*\*  $p < .001$ . Variables mean-centered prior to computing interaction term. Bootstrapped CIs based on 5,000 resamples.

### Discussion

The outcomes of the have a look at help each direct and slight relationships beneathneath research empirically. The pressure of on line gaining knowledge of turned into affirmed as a bad predictor of instructional overall performance of sizeable terrible impact, as Adnan and Anwar (2020) and Odriozola-Gonzalez et al. (2020) indicated the terrible effect of pressure of far off gaining knowledge of on pupil overall performance for the duration of the COVID-19 timeframe. The fee of the direct impact ( $= -.31$ ) indicates that the affiliation is nearly meaningful, which means that strain associated with on line mastering is a considerable hazard to the overall performance of college students in a virtual mastering context.

The maximum theoretically critical contribution of the take a look at is the affirmation of emotional intelligence as an vital moderator of the strain overall performance relationship. The fashion of simple slopes confirmed that the bad have an impact on of on line studying pressure on educational success become drastically compensated in excessive EI college students, and now no longer widespread at one fashionable deviation above the mean- a locating that gives a robust argument in prefer of conservation of sources paradigm (Hobfoll, 1989). The excessive EI college students is probably in a higher role to assess the web studying necessities as a doable project as opposed to a threatening hazard, do adaptive coping, and feature the emotional balancing act to maintain directly to the powerful have a look at behaviors regardless of of strain.

The null interplay impact of excessive-EI college students is of precise hobby particularly in a sensible sense. It means that EI additionally acts as a predictor of overall performance, however it's far a actual mental buffer that qualitatively modifications strain overall performance relationship. This end result builds at the preceding moderation research (Extremera et al., 2006; Poornima and Gnanasekaran, 2023) and establishes the cross-cultural power of the protecting position of EI in an internet gaining knowledge of populace of a Pakistani college. The truth that scholars of personal college have stated that they enjoy extra institutional EI sources and had better GPA additionally highlights the function of institutional assist withinside the dedication of outcomes.

All of those findings are indicative that college control aiming to help college students withinside the subject of on-line schooling should now no longer best recollect the technical elements of on line training however take note of the emotional and mental assets in their learners. Interventions which can be EI-primarily based totally and supplied with the help of virtual literacy are a promising method to the improvement of scholar resilience on the subject of on line gaining knowledge of necessities.

## Conclusion

This paper has proven that on line gaining knowledge of strain is a poor predictor of educational overall performance in a giant terrible manner amongst college students in a college in Islamabad, Pakistan, and emotional intelligence is a moderator of this type of relationship. The better EI college students have been drastically buffered in opposition to the overall performance-impairing impact of on-line mastering strain, and the moderation impact changed into additionally located to make a contribution a further 3.4 percentage of variance of educational overall performance to the general effects. The findings upload to understanding on EI and educational overall performance withinside the unique context of on line gaining knowledge of strain in Pakistan and provide a strong theoretical help of EI-primarily based totally interventions in post-secondary schooling.

## Recommendations

Online or combined gaining knowledge of universities need to comprise the idea of growing emotional intelligence into the framework of pupil help. EI schooling packages which might be short-term, together with the ones applied at some point of an orientation yr or the start of an educational 12 months, have proved to be powerful in improving self-law and pressure control abilities and may be provided to all college students enrolled in a path, with specific interest to folks who are converting the face-to-face mode of schooling to an internet one.

Online path teachers and educational advisors want to learn to discover the signs and symptoms of on line mastering strain and to directly refer the scholars to the applicable mental and educational assist services. Online guides ought to be designed to encompass an interactive element, common check-ins, community-constructing sports that lessen the social isolation that has been highlighted as a key thing in on-line getting to know pressure.

Future research have to use longitudinal designs a good way to decide causal directionality of EI, on-line mastering pressure, and educational achievements. Experimental studies that evaluates the effectiveness of EI interventions evolved mainly to use to on line college students could seriously complement the correlational proof here. It could be thrilling to encompass physiological and behavioral indices of strain and law of their studies, as this will assist to recognize how EI produces its buffering effects.

The policymakers withinside the better schooling quarter in Pakistan should make investments withinside the enhancement of digitally responsive emotional mastering infrastructure wherein on-line getting to know systems are made to preserve the nicely being of college students further to turning in educational services. Solving the structural difficulty of virtual get right of entry to and tool get entry to might additionally reduce a considerable supply of on line mastering pressure, mainly amongst college students with decrease socioeconomic status..

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