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# Mental Health and Academic Performance during COVID-19: The Pre-Dominant Role of Perceived Stress, Anxiety, and Depression on Academic Performance

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**Abstract:** *The rising concerns regarding mental health arising from the challenges due to pandemics emerged and it's negative effects on academic performance. Stress and depression levels affected students' mental well-being as well as academic performance. Surprisingly, this study revealed that the anxiety level of this young generation due to COVID-19 does not influence their activities rather students to have a strong mental capacity to maintain adverse situations. The most possible reason could be their belief that the impact of coronavirus is very low among the young generation. Therefore, they are not anxious about the coronavirus during the pandemic. Rather, they are having depression and stress due to the absence of a proper educational environment.*

**Keywords:** *Mental Health, Academic Performance, Resilience, Higher Education.*

## 1. INTRODUCTION

The novel coronavirus disease has turned itself into the most challenging catastrophe and dazed the whole planet. Nevertheless, according to the United Nations report till August 2021, Bangladesh is the only country in South Asia and 14 in the world where educational institutions were completely closed simultaneously due to COVID-19 (Abdullah, 2021). Moreover, UNICEF reports in 2021 mentioned that around 40 million students from primary to higher education suffered due to this prolonged closure of educational institutions. But the condition of mental health is not reported accordingly, which has a very long-term negative effect (Xiao, 2020).

During this COVID-19 outbreak, the youth especially university students are suffering more due to the vulnerable situation of the job market as they are very close to stepping in. Keeping themselves mentally afloat in these widespread disruptions, universities both public



and private switched to online learning which has increased stress among students. However, difficulties in operating computers, lack of proper equipment, low-speed internet in remote areas, lack of opportunity for group study, and so on worsen the situation to great extent including concerns about affecting COVID-19. Schwartz et al. (2021) anticipated a “second wave” that concerns the mental health issues occurring from the isolation youth are facing on educational institutions closures.

In Bangladesh, a study on the same subject was conducted with university students (Faisal et al., 2021), and it was found that 40.2% of students had moderate to severe anxiety symptoms, 72.1% had depressive symptoms, and 53.9% had mental health moderate to poor, 77.1% highlighted the effects of COVID-19, 95.1% were aware of COVID-19, and 77.1% changed their hygiene behavior due to the widespread use of COVID-19. Against this background, this study investigates the predominant role of stress, anxiety, and depression on mental well-being and academic performance of public and private university students throughout the pandemic in the Bangladeshi context with moderating effect of resilience.

### **Literature Review and Hypothesis Development Student’s Perceived Stress during COVID-19**

Perceived stress measures the contingency incidents which cannot be controlled but rather makes overloaded one’s life (Cohen, 1994). Stress can impair the physical and mental health of people with various disorders (O Donovan et al., 2013). Therefore, that distress impacted mental well-being negatively (Bewicka et al., 2008). Physicians and health workers are perceived distress due to COVID-19 which reduced their satisfaction severally psychological well-being (Dhingra & Dhingra, 2020). Numerous pieces of literature support that younger, or adult is more distressed due to this pandemic (Jiang, 2020). Moreover, well-being states the overall health of individuals (Cahill et al., 2021).

Hypothesis 1: Students’ perceived stress has a significant negative effect on mental well-being.

This pandemic and staying at home have had a huge impact on higher education (Son et al., 2020). There are a few articles about the effect of stress on student’s academic performance, especially business students which affects their academic performance. Perhaps business students are recognized as the top major in the job market (Gabre & Kumar, 2012). Ultimately, stress affects undergraduate students’ academic performance negatively (Elias et al., 2011; Melaku et al., 2015). A Malaysian study of undergraduate science students found that students experienced higher levels of stress in the middle of the semester. (Rafidah et al., 2009). Therefore-

Hypothesis 2: Students’ perceived stress has a significant negative effect on academic performance.

### **Student’s Perceived Anxiety During COVID-19**

Anxiety is a psychophysiological response to stress (Robinson, 1990). Besides, the anxiety due to COVID-19 has a momentous impact on an individual’s mental well-being (Paredes et al., 2021). Moreover, anxiety concerning COVID-19 is connected with psychological and behavioral factors and younger people reported having poorer mental health than others (Gasteiger et al., 2021). In Australia, people had a high level of anxiety during at early stages of COVID-19 which impaired their mental well-being (Dawel et al., 2020). Also, anxiety is



among the most dominant mental disorders (Malone & Wachholtz, 2018). Now we can predict-

Hypothesis 3: Students' perceived anxiety has a significant negative effect on mental well-being.

On the other hand, associated with insufficient skills, changes in one's mind, and as a result of learning problems (Russell & Topham, 2012). Students with anxiety disruption show slothful behavior (indifferent to learning or inconsistent performance) in their studies (Vitasari et al., 2010). There is plenty of research that found an opposite relationship between anxiety levels and students' academic performance (Awadalla, 2020). In the UK university, students experienced social anxiety, which may be the reason for learning problems in three clusters: impersonation about failing, embarrassment, and disabling effects (Russell & Topham, 2012).

Hypothesis 4: Students' perceived anxiety has a significant negative effect on academic performance.

### **Student's Perceived Depression during COVID-19**

Methodologically, depression is a mental illness, but it affects a person's physical and mental well-being (Pietrangelo, 2018). In the case of depression, people lose interest or pleasure in doing something (Litin, 2018). Among Australian population with undiagnosed at the early stage of COVID-19 had higher levels of depression, which was deteriorating their mental health (Dawel et al., 2020). In the United States, almost 26% of adults are affected by this disorder (Pietrangelo, 2018). The extent of depression is not only inversely related to psychological well-being but is also a strong predictor (Malone & Wachholtz, 2018). So, we can hypothesize-

Hypothesis 5: Students' perceived depression has a significant negative effect on mental well-being.

Depression can lead to a loss of interest in our behavior, reduced productivity, and negative social interactions (Khurshid et al., 2015). Researchers have found that depression is closely linked to memory loss or short-term memory loss. As a result, it is difficult for students to focus or think clearly (Bas, 2021). Moreover, depression negatively affects students' academic performance (Islam et al., 2020; Kawsar et al., 2019). Often, people with depression find it difficult to act and they can be dubious, chaotic, distracting, or easily upset. In addition, simple daily tasks become difficult which make at risk of poor academic performance (Bas, 2021). Thus-

Hypothesis 6: Students' perceived depression has a significant negative effect on academic performance.

### **Student's Mental Well-Being During COVID-19**

Mental well-being is a progressive concept (Turashvili & Japaridze, 2012). This is not only the absence of mental disorders, challenges, or difficulties but also how people react to the ups and downs of life. (Peterson, 2019). It enhances students' behavior, social integration, satisfaction, and academic performance (Hidayah et al., 2016). Several researchers recognize that stress, anxiety, and depression directly influence academic performance. In addition, it is transmitted through various mechanisms as well as psychological well-being plays a strong mediating role (Lubans et al., 2016). Therefore, we predict-



Hypothesis 7: Mental well-being has a positive relationship with academic performance.

Typically, students with higher levels of psychological and pathological well-being lead higher levels of academic achievement. Moreover, Students' academic success is associated with psychological well-being, satisfaction with results, and the management of stress (Grabel, 2017). On the other hand, psychological well-being both directly and indirectly affected academic performance (Ruppel et al., 2015). Therefore, individuals who have poor mental well-being will show poor work performance unintentionally (Singh, 2015).

On the other hand, separation from educational institutions with an academic workload causes them stress and affects psychological well-being, which ultimately affects academic performance (Yang et al., 2021). As a result, stress, anxiety, and depression affect well-being, and mental well-being affects academic achievement. Moreover, there is an indirect effect on well-being during a pandemic and well-being acts as a mediator also (Chung, 2015; Green, 2019). Therefore, we can predict the following hypotheses-

Hypothesis 8: Students' mental well-being mediates the relationship between perceived stress and academic performance.

Hypothesis 9: Mental well-being mediates the relationship between perceived anxiety and academic performance.

Hypothesis 10: Students' mental well-being mediates the relationship between perceived depression and academic performance.

### **The Moderating Role of Resilience**

At the sitting of the International Society for Traumatic Stress Studies in 2013, it was agreed that resilience can be defined differently within individuals, families, organizations, communities, and cultures. Resilience forces a person to adapt or recover easily from illness, misfortune, major life changes, and so on (Southwick et al., 2014). Garfton et al. (2019) listed three prominences of resilience (resistance, recovery, and robustness) called the "three Rs". Moreover, resilience ensures well-being through using resources (Panter-Brick, 2015). In another way, resilient people are more confident, determined, and self-efficacious which makes them more positive mindfulness. In the end, their psychological well-being improved (Mak et al., 2011).

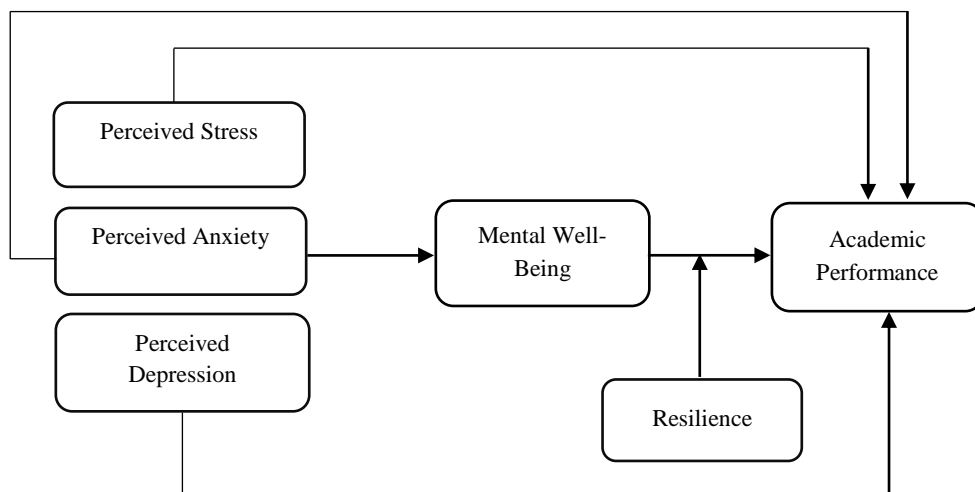
In addition, students experience tremendous physical and mental growth every day, which can lead to many new experiences and challenges. Being flexible gives you the confidence and a positive mindset to overcome these challenges (Parker, 2020). Also, there are three predicted outcomes of academic resilience: self-esteem, participation, and enjoyment (Mwangi et al., 2015). Resilient students are trying to maintain their achievement even in stressful situations but may fall at risk with their academic performance (Cassidy, 2015). Thoroughly, resilience has a positive influence on academic performance (Frost, 2020). Improving education on resilience and subjective well-being can result in an improvement in academic performance (Fernandez et al., 2017).

Hypothesis 11: Resilience has a significant positive effect on academic performance.

Hypothesis 12: Resilience moderates the relationship between mental well-being and academic performance.

## Research Framework

Based on the research objectives along with the above literature support the following research model has been presented. There are three exogenous variables (perceived stress, perceived anxiety, and perceived depression) and an endogenous variable (academic performance) with a mediating variable of mental well-being and a moderating variable of resilience between mental well-being and academic performance.



## 2. METHODOLOGY

### Study instrument

Following a comprehensive literature review, a structured questionnaire was designed where 4 items were used for perceived stress and adapted from Cohen et al. (1994). To determine perceived anxiety, 7 items were used from Silva et al. (2020). To understand perceived depression, 6 items were taken from Kutcher (2008). In measuring mental well-being 5 items were used by Topp et al. (2015). Academic performance was measured from 6 items by Gopal et al. (2021), and for resilience 10 items were used by Jardim et al. (2021). A five-point Likert scale (1 = strongly disagree, 5 = strongly agree) was used to evaluate each element of these design variables.

### The domain of the study

Initially, we identified key informants among different universities both public and private from business schools for an online survey. A Google form was prepared and adopted snowball sampling as the key informants submitted their responses and circulated the link using their network.

### Sample size

To analyze the sample size, we used G\*Power 3.1 (Faul et al., 2009) software by following settings:  $f^2 = 0.05$  (medium),  $\alpha = 0.05$ , and the number of predictors = 5 (Gefen et al., 2011), and the power was set at 95% (Faul et al., 2009) the minimum sample size required to test this model was 410. Therefore, we used 432 responses which exceeded the minimum requirements.



**Findings and Analysis**

**Respondents’ Profile**

Among the total respondents, 33.79% are female whereas 66.21% of respondents are male. In our study, 54.9% of the total respondents are from private universities regardless of the location of the university. Approximately 46% of respondents reside in semi-urban in contrast to 28.7% and 24.8% of respondents who are living in rural and urban areas consecutively (see Table 1).

Table 1: Demographic profile of respondents

		Gender		Total	Percentage
		Female	Male		
University	Private	81	156	237	54.9%
	Public	65	130	195	45.1%
Total		146	286	432	100%
Location	Rural	42	82	124	28.7%
	Semi-Urban	65	136	201	46.5%
	Urban	39	68	107	24.8%
Total		146	286	432	100%
Level	1st Year	42	91	133	30.8%
	2nd Year	29	56	85	19.7%
	3rd Year	20	32	52	12.0%
	4th Year	39	57	96	22.2%
	Master	16	50	66	15.3%
Total		146	286	432	100%

**Measurement model**

In our study, three out of ten items of the construct resilience were found to have high cross-loading. After the removal of the three items, all the items of the study showed higher than recommended factor loadings of 0.708 (Hair et al., 2019). In the reliability test, Cronbach's alpha and composite reliability and found that all the constructs had a score between 0.70 to 0.90 which is sufficient for further analysis through the three constructs have a CR value higher than 0.90 but less than 0.95 (see Table 2) (Hair et al., 2019). Moreover, according to the results of the average variance extracted (AVE), all the factors meet the minimum recommended score of 0.50 to be declared the constructs having convergent validity (Hair et al., 2019).

Table 2: Confirmatory Factor Analysis (CFA) results: Measurement Model

Constructs	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Perceived Depression	PCD1	0.782	0.868	0.901	0.602
	PCD2	0.761			
	PCD3	0.791			
	PCD4	0.739			



	PCD5	0.792			
	PCD6	0.791			
Perceived Anxiety	PCA1	0.835	0.893	0.919	0.720
	PCA2	0.830			
	PCA3	0.880			
	PCA4	0.856			
	PCA5	0.823			
	PCA6	0.877			
	PCA7	0.838			
Perceived Stress	PCS1	0.832	0.869	0.890	0.718
	PCS2	0.845			
	PCS3	0.853			
	PCS4	0.860			
Resilience	RS1	0.821	0.899	0.921	0.668
	RS2	0.798			
	RS3	0.810			
	RS4	0.803			
	RS5	0.822			
	RS6	0.833			
	RS7	0.835			
Mental Well Being	MWB1	0.835	0.874	0.889	0.702
	MWB2	0.831			
	MWB3	0.833			
	MWB4	0.864			
	MWB5	0.828			
Academic Performance	ACP1	0.805	0.881	0.898	0.653
	ACP2	0.837			
	ACP3	0.769			
	ACP4	0.826			
	ACP5	0.800			
	ACP6	0.811			

To assess the discriminant validity of the study, HTMT is proven to be more efficient than the Fornell-Larcker criteria through the use of Monte Carlo simulation (Henseler et al., 2015). According to Hair et al. (2019) and Hensler et al. (2015), the recommended level of HTMT should be less than 0.85 to consider the constructs as conceptually dissimilar constructs. In our study, we found that all the constructs of our study are less than 0.85. Therefore, all the constructs in our study are theoretically different (see Table 3).

Table 3: Discriminant Validity (HTMT Criterion)

	PCD	PCA	PCS	MWB	RS	ACP
PCD						
PCA	0.058					
PCS	0.830	0.061				
MWB	0.825	0.084	0.747			
RS	0.547	0.056	0.579	0.501		
ACP	0.616	0.046	0.652	0.582	0.747	

Legend: PCD→ Perceived Depression; PCA→ Perceived Anxiety; PCS→ Perceived Stress; MWB→ Mental Well-Being; RS→ Resilience; ACP→ Academic Performance.

**Structural model (hypotheses testing)**

We have used Smart PLS version 3.3 to draw and analyze the structural equation modeling (SEM) due to its capability to evaluate a series of interconnected dependent relationships simultaneously (SmartPLS Version 3.3.2, Ringle et al. 2015). The graphical depiction of the SEM is given in Fig. 2.

Here, the exogenous variables explain 54.7% of the variance of the endogenous variable. To conduct the hypotheses tests we executed recommended complete bootstrapping of 5000 samples (Hair et al., 2019). To become statistically significant, the t-value should be higher than 1.96, the p-value should be less than 0.05 and there shouldn't be any zero between the bias-corrected confidence interval (Benitez et al., 2020; Hair et al., 2019).

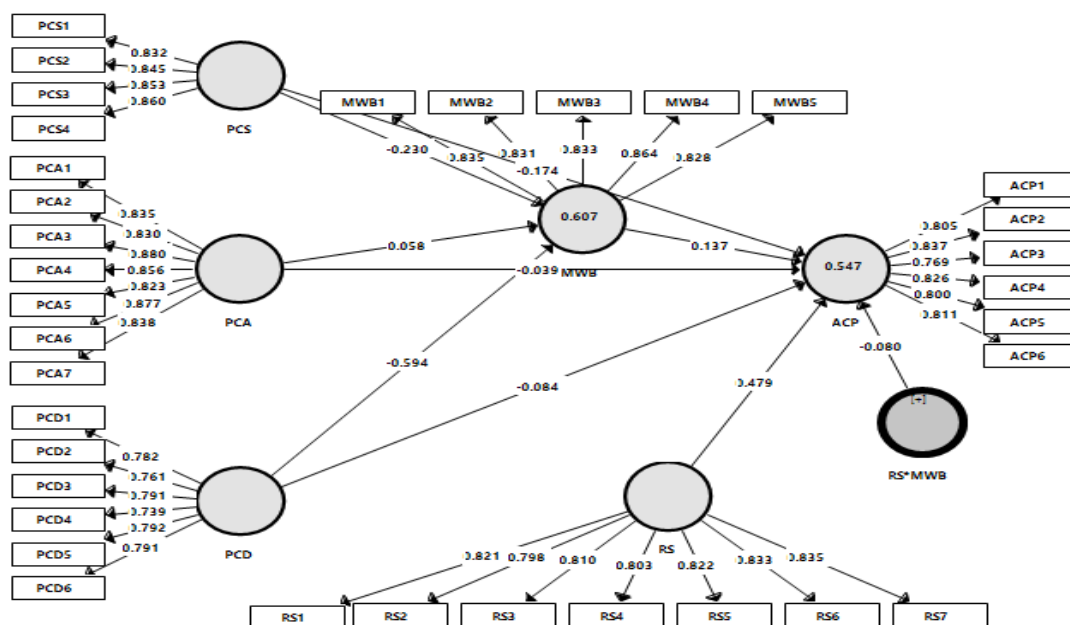


Fig. 2: Partial least square structural equation model





Based on the results of path coefficients, all the hypotheses were found to be supported except for three of them (see Table 4). The relationship between perceived depression, and stress during the COVID-19 pandemic with the student's mental well-being and their academic performance were found to have a negative relationship with a high significance p-value of less than 0.00 except for the pertinence between perceived stress and academic performance which had a moderate significance level of 0.03 which is less than the recommended 0.05 p-value. All these relationships were inverse. The perceived depression and mental well-being of students have a highly negative bond with the highest negative beta value ( $\beta = -0.595$ ,  $t = 10.456$ ,  $P = 0.00$ ).

Table 4: Path coefficient

	Beta	Standard error	t statistics	P values	Bias-corrected confidence interval	Results
PCS -> MWB	-0.23	0.066	3.485	0.000	[-0.340, -0.123]	Supported
PCS -> ACP	-0.066	0.024	2.711	0.003	[-0.116, -0.033]	Supported
PCA -> MWB	0.06	0.034	1.632	0.051	[-0.023, 0.100]	Not supported
PCA -> ACP	0.017	0.010	1.539	0.062	[-0.004, 0.031]	Not supported
PCD -> MWB	-0.595	0.057	10.456	0.000	[-0.681, -0.494]	Supported
PCD -> ACP	-0.169	0.032	5.284	0.000	[-0.225, -0.120]	Supported
MWB -> ACP	0.285	0.051	5.553	0.000	[0.205, 0.373]	Supported
RS -> ACP	0.544	0.060	9.097	0.000	[0.437, 0.634]	Supported
PCS -> MWB -> ACP	-0.066	0.024	2.711	0.003	[-0.116, -0.033]	Supported
PCA -> MWB -> ACP	0.017	0.010	1.539	0.062	[-0.004, 0.031]	Not supported
PCD -> MWB -> ACP	-0.169	0.032	5.284	0.000	[-0.225, -0.120]	Supported
RS*MWB -> ACP	-0.088	0.042	2.140	0.016	[-0.159, -0.022]	Supported

Legend: PCD → Perceived Depression; PCA → Perceived Anxiety; PCS → Perceived Stress; MWB → Mental Well-Being; RS → Resilience; ACP → Academic Performance.

The relationship between perceived anxiety with students' mental well-being and the relationship between perceived stress and academic performance were found to be non-significant with a t-value of 1.632, and 1.539 respectively along with a p-value of 0.51, and 0.62 which are higher than the recommended significance level. The mental well-being of students had a significant positive relationship with their academic performance of students ( $\beta = 0.285$ ,  $t = 5.553$ ,  $P = 0.00$ ). Similarly, the student's capability to deal with difficulties had also a highly significant relationship with students' academic performance ( $\beta = 0.544$ ,  $t = 9.097$ ,  $P = 0.00$ ). On the contrary, the moderating effect of resilience on the relationship



between student's mental well-being and academic performance was found to have a significant negative relationship ( $\beta = -0.088$ ,  $t = 2.140$ ,  $P = 0.016$ ).

Through the analysis of specific indirect effects, the study tried to explain the mediating effects of the mental well-being of students between the relationships of perceived depression, perceived anxiety, and perceived stress with the endogenous variable of academic performance. The results show that the relationship between perceived anxiety and academic performance mediated by the students' mental well-being during the COVID-19 pandemic was found to be non-significant with a p-value higher than the recommended value. But the mediating effects of mental well-being between the perceived stress and perceived depression on the student's academic performance were found to have significant enough with a p-value less than 0.05 which is lower than the recommended. In brief, we found that the three relationships consisting of the independent variable perceived anxiety over the COVID-19 pandemic over the students had no relationship with students' academic performance.

### **3. CONCLUSION AND FUTURE DIRECTIONS**

The epidemic emergency changed the student's life drastically. This study shows that students are at risk of experiencing psychological distress due to this traumatic event that affects their mental well-being as well as academic performance. On the other hand, the level of anxiety is not affecting them noticeably in the case both directly and indirectly. There may be a reason that the perceptions about younger are less affected than older due to COVID-19. Furthermore, students who are in financial crisis and rural areas mostly suffer to pursue online classes or distance learning due to poor internet speed facilities. As a result, students are depressed and distressed which hinders academic progress. The study also finds that although resilience has a direct positive influence on academic progress, students are unable to use their self-determination to deal with mental breakdowns. Overall, students are the major sufferer in this protracted pandemic situation. In this context, students must be taken initiative for stress management by teachers or counselors. Future research is encouraged on the approaches to boost students' mental support and to increase their adaptability to pandemic situations and skills in disaster management.

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