

# **Empathizing Emotional Resilience: A Study on Graduates Using Empathy Framework**

## Aruna Kumari Nuthanapati<sup>1</sup>, Gampala Prabhakar<sup>2</sup>

<sup>1</sup> Assistant Professor, Commerce & Management, VNR Vignana Jyothi Institute of Engineering & Technology, Hyderabad, Telangana, India
<sup>2</sup> Associate Professor, MBA, Dr.B.R.Ambedkar Institute of Management and Technology Baghlingampalli Hyderabad, Telangana, India.

### Abstract

An emotional resilience at students stage is crucial for physical and emotional health in academic achievement. Emotional intelligence and self-efficacy are key factors in predicting resilience in academic careers. This research focuses on few basic demographic factors such as age, gender, course and their impact on emotional resilience, using empathy framework. The empathy framework is designed to understand students' thoughts and feelings with five components, Activities, Environment, Interactions, Objects & User self-perception (AEIOU). The data has collected questionnaire and empathy interviews from 208 participants of under-graduate and post-graduate students of different institutions in Hyderabad city. The Results were analyzed based on 30 independent factors under the framework. The study has shown there is no much difference in emotional resilience based on gender and age groups, but it is positive in case of course level and type of course. The study also found that there is a significant correlation between empathy framework and emotional resilience. This finding helps to study the emotional status of student groups continuously. However, the violation of the proportional odds assumption suggests that the relationship between predictors and outcomes may differ across response variables. The study suggests there is a significant need of assessing impact of deep demographics on teenagers' emotional resilience.

Keywords: Emotional Resilience, Empathy, AEIOU Framework, Self-efficacy

#### 1. Introduction

Emotional resilience refers to an individual's capability to effectively cope with and recover from difficult events, such as adversity, trauma, or stress. It involves the ability to adjust constructively and preserve psychological well-being[1]. The emotional resilience of students is an essential component of their overall well-being and academic achievement. Research indicates that emotional intelligence and self-efficacy are important factors in predicting student resilience in difficult situations, such as the COVID-19 pandemic[2]. In addition, the study by Kocatürk (2020) examined the influence of childhood traumas, emotional self-efficacy, and locus of control on psychological resilience[3]. The significance of perceived instructor emotional support in promoting students' academic resilience and college engagement has been emphasized, underscoring the crucial function of supportive environments in nurturing student well-being[4]. Gaining insight into emotional resilience in educational environments is essential for fostering student well-being and achieving academic excellence.



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Emotional resilience is an essential aspect of psychological resilience, as it encompasses the capacity to cultivate happy emotions and bounce back swiftly from unpleasant emotional encounters[5]. Furthermore, studies examining the influence of emotional resilience on psychological distress and well-being in students have indicated that incorporating emotional resilience skills training into the curriculum may reduce psychological distress among students[6]. Furthermore, the study conducted by Won.S. et al. (2018) has highlighted emotional intelligence, social intelligence, and life management methods as crucial elements in improving the resilience and well-being of students[7]. Therefore, emotional resilience in students is a complex concept that is impacted by multiple aspects including personality traits, emotional intelligence, previous experiences, and social support. Gaining a comprehensive understanding of these characteristics and how they interact with each other is crucial for devising successful measures to improve student resilience and well-being, especially in demanding academic settings.

This study aims to explore the factors through the lens of the AEIOU Empathy Framework, which encompasses five key dimensions: Activities, Environment, Interactions, Objects & User (Self) perseverance. Total number of 30 Factors identified around empathy framework of AEIOU and demographical details such as age, gender, course studying are included in questionnaire. The categorised framework of questionnaire is provided as an annexure. There are 250 students selected through stratic sampling method to collect the data but only 208 students have fully participated through out the complete questionnaire and in interviews from under-graduate and post-graduate courses of different institutions. The data is statistically analyses with proper hypothesis to show the relationship between five components of the empathy framework and its overall contribution to emotional resilience. However, the violation of the proportional odds assumption suggests that the relationship between predictors and outcomes may differ across response variables. The results emphasize the need for further research in different users and environments to further understand emotional resilience.

## 2. Related Work

Academic self-efficacy is a strong indicator of academic resilience, indicating that students with higher self-efficacy are more likely to show resilience when faced with challenges[11]. Furthermore, there is a correlation between emotional resilience and both happy and negative emotions. Research conducted by Galatzer-Levy et al. in (2013) has shown that higher levels of negative emotion are more likely to lead to stressful outcomes, but positive emotion can differentiate between persons who are resilient and those who experience increasing symptoms over time [12]. The topic of emotional resilience in students has been thoroughly examined in a wide range of settings. Research has investigated the influence of good emotions on the ability to recover and adapt during times of crisis. The study by Fredrickson et al. (2003) and Cohn et al. (2009) examined the function of resilience in mediating the association between emotional intelligence and perceived stress[13, 14]. Another study by Sarrionandia et al. (2018) investigated the mediating role of resilience in this relationship[15]. Additionally, Ainiyah et al. (2021) explored the characteristics that predict student resilience in online learning environments[16]. Furthermore, scholarly studies have examined the correlation between positive emotions and resilience in undergraduate students [17] the impact of COVID-19 on emotional resilience in middle school students[18], and the postpandemic conduct associated with academic resilience and student engagement in higher education[19]. Moreover, research has investigated the link between the inclination towards addiction and resilience,



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which is influenced by distress tolerance and emotion regulation, in university students.[20] Additionally, the connection between emotional agility, resilience, and emotional intelligence has been explored among university students[21]. Previous research has examined the connections among mindfulness, perceived stress, and resilience as well as the association between stress coping methods and resilience in college students with depression[22]. This research significantly enhances our comprehension of emotional resilience in students and emphasize the significance of elements such as positive emotions, emotional intelligence, and stress coping strategies in promoting resilience and well-being in educational environments.

Research has demonstrated that empathy education is successful in enhancing the skills of undergraduate nursing students. Among many approaches, immersive and experiential simulation-based interventions have been found to be the most impactful[23]. Research conducted on medical students has revealed divergent degrees of empathy during their medical education, as indicated by studies that have reported increased levels, a combination of levels, or unaltered levels of empathy [24]. Further study is needed to better understand the trajectory of empathy during undergraduate medical education[25]. Studies have demonstrated variations in empathy levels among medical college and medical school students, with disparities reported depending on the educational framework[26]. Research has shown that empathy may be imparted and maintained by educational initiatives that emphasise the ability to see, comprehend, and react to the emotions of others[27]. According to Nasello et al. 2018 [28], it is regarded important to incorporate empathy training into the educational curriculum of medical students. Furthermore, research has shown that immersive empathy education programmes hold great potential for fostering effective healthcare education[29]. Although there is already a substantial amount of study on emotional resilience in students, there are still areas that require further investigation. There is a requirement for additional research that thoroughly examines the elements that impact emotional resilience in students at various educational levels and in diverse fields of study. In addition, future research might investigate the enduring impact of interventions aimed at enhancing emotional resilience on the well-being and academic achievements of students. Gaining a comprehensive understanding of the relationship between emotional resilience, other psychological characteristics, and environmental influences might offer significant insights for devising effective methods to strengthen kids' resilience when confronted with difficulties.

## 3. Research Methodology:

Research methodology consists of objectives, hypotheses, participants details, data collection and validation. To find the results, both qualitative and quantitative methods are adapted by using empathy approach among students. Statistical analysis is performed for quantitative data sample and results are interpreted along with qualitative information from interviews. The following objectives are focused on this research:

- To understand emotional resilience among students
- To study the relationship of demographic factors and emotional resilience among students
- To study the level of impact of demographic factors on emotional resilience among the students

## **3.1 The Empathy Framework:**

The AEIOU Empathy Framework is a comprehensive paradigm that incorporates multiple facets of empathy, including Awareness, Enjoyment, Interest, Opinion formation, and understanding[10].This



framework offers a systematic method for comprehending and assessing users' perceptions and experiences about their activities, environmental impact, influence of interactions, connection to things, and self-needs as a user. This approach facilitates educators in assessing students' overall views, interests, and emotional reactions, so improving their capacity to establish an emotional connection among peers and others to their specific requirements.



### Figure 1: Framework of AEIOU Empathy Process

The framework comprises five interconnected elements, as shown in above figure 1, each playing a role in fostering empathy among students and educators.

**3.1.1** Activities: This component is centered around a range of activities, exercises, and experiences that are specifically created to foster empathy. The connected emotions to the activities and the stress factor when the activities are not been achieved collected as dataset. Important activities are included in questionnaire such as attending college or class on time, maintaining right percentage of attendance, peer competition, projects completion, participations and pursuing hobbies.

**3.1.2. Environment:** The physical and social surroundings have a vital impact on promoting empathetic connections. In this phase, a student's living area or room, home and campus environment is considered to collect data.

**3.1.3. Interactions:** Interpersonal contacts play a crucial role in the cultivation of empathy. This component is dedicated on cultivating favorable relationships and significant connections among peers, family members individually, relatives, neighbors & professionals.

**3.1.4. Objects:** Objects are physical components present in the learning environment that have the potential to affect empathy which includes pocket money, personal resources, devices, means of travel, etc.

**3.1.5** User: The user component focuses on self-perception with the individuals. The user component is tested with the questions of controlling self-emotions, expression of emotions, balance in emotions, positive attitude, behavior and communication skills.

The questionnaire covered all the components of 5 elements of framework in 30 questions for data collection through online and offline.



### 3.2 Hypotheses:

H1a: There is a difference in management of emotional resilience between male and female student H1b: There is a difference in management of emotional resilience between graduate and postgraduate students

H1c: There is a difference in management of emotional resilience between different age group students

H2: There is a significant relationship between selected emotional resilience variables

H3: There is an impact of demographic attributes on emotional resilience

**3.3 Participants & Data Collection:** Primary data collected from structured questionnaire and interview method from 208 participants in students' fraternity. Secondary data through open-source literature review used to identify gaps. A survey of 135 students covered with empathy interviews and 100 copies of questionnaire is distributed among students of under-graduate and post-graduate using random sampling technique. Among 100 questionnaire copies 73 were found with answers for complete questionnaire. Hence, the data of 209 students is evaluated for findings.\

#### 3.4 Data Analysis & Results

Statistical analysis has been performed using SPSS results interpreted along with the result of statistical analysis. Initially, the reliability test is conducted to find survey components and overall emotional resilience score show good to excellent reliability and it is suggesting that the survey items are well-correlated and the scale is reliable for measuring emotional resilience among students which shows the Cronbach's Alpha ( $\alpha$ ) values for different components of the survey on emotional resilience as follows:

Survey Questions under AEIOU	Number of	Cronbach'
framework	Items (Fac-	s Alpha (α)
	tors)	
Activities (Feeling stressful and low	7	.814
when students are unable to perform the		
activities)		
Environment (Students are in dissatis-	3	.788
faction & stressful about their surround-		
ing environment)		
Interactions (Student interaction with	10	.928
people is not feeling good and feel un-		
safe)		
Objects (Students are not satisfied or	4	.835
facing problem with the objects what		
they have)		
User (Self-perception)	.868	
Emotional Resilience	30	.925

Table 1: Reliability test of AEIOU Framework components



**H1a: There is a difference in management of emotional resilience between male and female students** To test this hypothesis, mean, standard deviation, standard error mean and independent sample test (Levene's) for equality of variances and t-test for equality of means calculated for all five components as shown in *table-2*. The t-test is used to determine if there are significant differences between the means of male and female students.

Gender & Course	Study	N	Mean	Std. De-	Std. Er-
				viation	ror Mean
Activities	Female	58	2.55	.841	.110
	Male	150	2.67	.910	.074
	UG	178	2.65	.826	.062
	PG	30	2.57	1.223	.223
Environment	Female	58	3.36	1.071	.141
	Male	150	3.41	1.160	.095
	UG	178	3.45	1.089	.082
	PG	30	3.10	1.348	.246
Interactions	Female	58	4.05	1.033	.136
	Male	150	3.89	1.084	.089
	UG	178	4.01	1.006	.075
	PG	30	3.50	1.333	.243
Objects	Female	58	3.40	1.169	.153
	Male	150	3.23	1.172	.096
	UG	178	3.38	1.119	.084
	PG	30	2.70	1.317	.240
Users	Female	58	3.12	1.010	.133
	Male	150	3.11	1.065	.087
	UG	178	3.21	1.007	.075
	PG	30	2.57	1.135	.207
Student Emo-	Female	58	3.31	.754	.099
tional Resilience	Male	150	3.25	.835	.068
	UG	178	3.33	.748	.056
	PG	30	2.90	1.062	.194

Table 2: Group statistics of students' gender and course studying

Levene's Test for Equality of Variances checks if the variances of the two groups are equal, which informs whether to use equal or unequal variance assumptions in the t-test. For all categories (Activities, Environment, Interactions, Objects, User (Self), and overall Student Emotional Resilience), the significance (Sig.) values for Levene's Test are greater than 0.05, indicating that the assumption of equal variances is not violated. For all categories, the Sig. (2-tailed) values are greater than 0.05, which suggests that there are no statistically significant differences between male and female students' understanding of emotional resilience in any of the categories tested.



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		Leven Test Equal Varia	ne's for lity of nces	t-test	t-test for Equality of Means					
		F	Sig.	t	df	Sig. N df (2- D		Std. Er- ror	Differen Confide level (95	ice of ince 5%)
				-		tailed)	ence	Dif- fer- ence	Lowe r	Upper
Equal vari-	as- sumed	.759	.385	- .834	206	.405	115	.138	387	.157
Activities	not as- sumed			- .863	111.4 8	.390	115	.133	379	.149
Equal vari- ances of	as- sumed	.874	.351	- .292	206	.771	051	.176	398	.295
Environ- ment	not as- sumed			- .302	111.6 0	.763	051	.170	387	.285
Equal vari-	as- sumed	.623	.431	.998	206	.320	.165	.165	161	.491
teractions	not as- sumed			1.01 9	108.3 3	.310	.165	.162	156	.486
Equal vari-	As- sumed	.110	.741	.901	206	.369	.163	.181	194	.520
Objects	not as- sumed			.902	103.9 5	.369	.163	.181	195	.522
Equal vari-	as- sumed	.434	.511	.045	206	.964	.007	.162	313	.328
Users	not as- sumed			.046	108.8 6	.963	.007	.159	307	.322
Equal vari- ances of In-	as- sumed	.227	.634	.506	206	.613	.064	.126	184	.312
Equal Vari-a ances of In-s ceractions Student r Emotional s Resilience	not as- sumed			.530	114.0 4	.597	.064	.120	174	.302

Table-3: Result of independent sample test for gender connection in resilience

In summary, the t-test results shown in *table-3* indicate that there is no evidence to support the hypothesis (H1a) that there is a difference in understanding emotional resilience between male and female students for the categories tested in the survey and hence, H1a rejected.



# H1b: There is a difference in management of emotional resilience between graduate and postgraduate students

This hypothesis is also measured same as H1a, and summary of t-test results for each category is as follows:

- Activities: The t-value is 0.451 with 206 degrees of freedom (df), and the p-value (Sig. (2-tailed)) is 0.653, which is greater than the standard alpha level of 0.05. This indicates that there is no significant difference between the two groups in this category.
- **Environment:** The t-value is 1.568 with 206 df, and the p-value is 0.118, also greater than 0.05. Thus, no significant difference is found here as well.
- **Interactions:** The t-value is 2.422 with 206 df, and the p-value is 0.016, which is less than 0.05. This suggests a significant difference between the two groups, with undergraduate students reporting higher levels of emotional resilience in interactions.
- **Objects:** The t-value is 2.982 with 206 df, and the p-value is 0.003, indicating a significant difference, with undergraduate students feeling more positive about the objects they have compared to postgraduate students.
- User (Self): The t-value is 3.168 with 206 df, and the p-value is 0.002, showing a significant difference, with undergraduate students perceiving themselves as stronger in comparison to postgraduate students.

Student Emotional Resilience Overall: The t-value is 2.698 with 206 df, and the p-value is 0.008, suggesting a significant difference in overall emotional resilience, favouring undergraduate students.

		Leven	e's	t-test	- for Equ	ality o	f Means			
		Test Equal	for itv of							
		Varia	nces				1			
		F	Sig.	t	df	Sig. (2-	Mean Differ-	Std. Er-	95% Confi- dence Interval Difference	
				)		ence	101	Lowe r	Up- per	
Equal var- iances of	as- sumed	17.13 1	.000	.451	206	.653	.079	.176	268	.427
Activities	not as- sumed			.343	33.5 9	.734	.079	.232	392	.550
Equal var- iances of	as- sumed	2.76 8	.098	1.56 8	206	.118	.349	.223	090	.789
Environ- ment	not as- sumed			1.34 8	35.6 6	.186	.349	.259	177	.876
Equal var- iances of	as- sumed	7.59 5	.006	2.42 2	206	.016	.506	.209	.094	.917

Table 4: result of independent sample test for gender connection in resilience



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Interac-	not as-			1.98	34.7	.055	.506	.255	012	1.023
tions	sumed			5	8					1.020
Equal var-	As-	2.93	000	2.98	206	002	676	227	220	1 1 2 4
iances of	sumed	7	.088	2	200	.005	.070	.221	.229	1.124
Objects	not as-			2.65	36.4	012	676	255	160	1 102
	sumed			6	0	.012	.070	.235	.100	1.195
Equal var-	as-	801	272	3.16	206	002	641	202	242	1.040
iances of	sumed	.001	.372	8	200	.002	.041	.202	.242	1.040
Users	not as-			2.90	37.0	006	641	221	104	1 099
	sumed			7	8	.000	.041	.221	.194	1.000
Equal var-	as-	3.73	055	2.69	206	008	126	158	115	727
iances of	sumed	8	.055	8	200	.008	.420	.130	.115	.737
Interac-										
tions Stu-	not as			2 11	24.0					
dent Emo-	not as-			2.11	34.0 1	.042	.426	.202	.016	.836
tional Re-	sumed			U	1					
silience										

In summary, the t-test results shown in the *table-4* indicate that there are significant differences in the understanding of emotional resilience between undergraduate and postgraduate students in the categories of Interactions, Objects, User and the overall Student Emotional Resilience score. For the Activities and Environment categories, no significant differences were found and hence, H1b accepted.

# H1c: There is a difference in in management of emotional resilience between different age group students

The descriptive analysis and ANOVA results for all five components are as follows:

- Activities: The F-value is 0.186 with a p-value (Sig.) of 0.831. Since the p-value is greater than 0.05, there is no statistically significant difference between the different age groups' understanding of emotional resilience in this category.
- **Environment**: The F-value is 0.595 with a p-value of 0.552. Again, the p-value is greater than 0.05, indicating no significant difference between the age groups.
- **Interactions**: The F-value is 2.407 with a p-value of 0.093. The p-value is greater than 0.05, suggesting no significant difference, although it is closer to the threshold than the previous categories.
- **Objects:** The F-value is 4.379 with a p-value of 0.014. Here, the p-value is less than 0.05, indicating a statistically significant difference between the age groups' feelings about the objects they have.
- User (Self): The F-value is 6.734 with a p-value of 0.001. This p-value is well below 0.05, showing a significant difference in how the different age groups perceive themselves.

Student Emotional Resilience Overall: The F-value is 2.922 with a p-value of 0.056. This p-value is just above the 0.05 threshold, suggesting no significant difference with a very marginal margin.



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		N	Mean	Std.	Std.	95%	Confi-	Mini-	Maxi-
				Devia-	Error	dence	Interval	mum	mum
				tion		for Mea	n		
						Lower	Upper		
						Bound	Bound		
ACTIVITIES	18-	181	2.64	.830	.062	2.51	2.76	1	5
	21								
	21-	24	2.67	1.239	.2.53	2.14	3.19	1	5
	24		,	1.209			0.13	-	C
	24-	3	2.33	1.528	.882	-1.46	6.13	1	4
	27								
	To-	208	2.63	.891	.062	2.51	2.76	1	5
	tal					-			
ENVIRON-	18-	181	3.43	1.096	.081	3.27	3.59	1	5
MENT	21								
	21-	24	3.21	1.351	.276	2.64	3.78	1	5
	24								
	24-	3	3.00	1.732	1.000	-1.30	7.30	2	5
	27								
	To-	208	3.40	1.133	.079	3.24	3.55	1	5
	tal								
INTERAC-	18-	181	3.99	1.025	.076	3.84	4.14	1	5
TIONS	21								
	21-	24	3.54	1.318	.269	2.99	4.10	1	5
	24								
	24-	3	3.33	1.155	.667	.46	6.20	2	4
	27								
	To-	208	3.93	1.070	.074	3.79	4.08	1	5
	tal								
OBJECTS	18-	181	3.37	1.126	.084	3.21	3.54	1	5
	21								
	21-	24	2.67	1.341	.274	2.10	3.23	1	5
	24								
	24-	3	2.67	1.155	.667	20	5.54	2	4
	27								
	To-	208	3.28	1.171	.081	3.12	3.44	1	5
	tal								
USER (SELF)	18-	181	3.22	1.007	.075	3.07	3.36	1	5
	21								
	21-	24	2.46	1.141	.233	1.98	2.94	1	5
	24								

Table 5: Descriptives of overall emotional intelligence for 5 components



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	24-	3	2.33	.577	.333	.90	3.77	2	3
	27								
	To-	208	3.12	1.048	.073	2.97	3.26	1	5
	tal								
Student Emo-	18-	181	3.31	.749	.056	3.21	3.42	1	5
tional Resili-	21								
ence	21-	24	2.96	1.122	.229	2.48	3.43	1	5
	24								
	24-	3	2.67	1.155	.667	20	5.54	2	4
	27								
	To-	208	3.26	.812	.056	3.15	3.38	1	5
	tal								

#### Table-6: result of ONE-WAY ANOVA test

		Sum of	df	Mean	F	Sig.
		Squares		Square		
ACTIVITIES	Between Groups	.297	2	.149	.186	.831
	Within Groups	163.934	205	.800		
	Total	164.231	207			
ENVIRONMENT	Between Groups	1.535	2	.767	.595	.552
	Within Groups	264.345	205	1.289		
	Total	265.880	207			
INTERACTIONS	Between Groups	5.438	2	2.719	2.407	.093
	Within Groups	231.619	205	1.130		
	Total	237.058	207			
OBJECTS	Between Groups	11.628	2	5.814	4.379	.014
	Within Groups	272.199	205	1.328		
	Total	283.827	207			
USERS:	Between Groups	14.009	2	7.005	6.734	.001
	Within Groups	213.222	205	1.040		
	Total	227.231	207			
Student Emotional	Between Groups	3.782	2	1.891	2.922	.056
Resilience	Within Groups	132.675	205	.647		
	Total	136.457	207			

In summary, one-way ANOVA results shown in *table-6* indicate that there are significant differences in the understanding of emotional resilience between different age group students in the categories of OBJECTS and USER (SELF). For the other categories, including the overall Student Emotional Resilience score, no significant differences were found and hence, H1c rejected.



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#### H2: There is a significant relationship between selected emotional resilience variables

- Activities: The correlation with overall Student Emotional Resilience is 0.582, which is significant at the 0.01 level (2-tailed). This indicates a moderate positive correlation, suggesting that students who feel stressed and low when unable to do activities tend to have lower overall emotional resilience.
- **Environment**: The correlation coefficient is 0.704, indicating a strong positive correlation with overall Student Emotional Resilience. This suggests that dissatisfaction and stress about one's environment are strongly related to lower emotional resilience.
- **Interactions**: The correlation coefficient is 0.654, also indicating a strong positive correlation. Feeling alone and unsafe in interactions is strongly related to lower emotional resilience.
- **Objects:** The correlation coefficient is 0.730, suggesting a strong positive correlation. Disliking what one has and having more expectations is strongly related to lower emotional resilience.
- User (Self): The correlation coefficient is 0.645, indicating a strong positive correlation. Perceiving oneself as weak is strongly related to lower emotional resilience.

		Activi-	Environ-	Interac-	Ob-	Users	Resili-
		ties	ment	tions	jects		ence
Student	Pearson	.582**	.704**	.654**	.730**	.645**	1
Emo-	Correlation						
tional	Sig. (2-	.000	.000	.000	.000	.000	
Resili-	tailed)						
ence	Ν	208	208	208	208	208	208
**. Correla	ation is signific	ant at the 0.	01 level (2-ta	iled).			

Table 7: result of Correlations Analysis

The significance level (Sig. (2-tailed)) for all these correlations is 0.000, which is well below the conventional alpha level of 0.05, indicating that these correlations are statistically significant. In summary, the correlation test results suggest that there are significant positive relationships between the selected emotional resilience variables and the overall Student Emotional Resilience. The stronger the feelings of stress, dissatisfaction, loneliness, and negative self-perception, the lower the overall emotional resilience among students and hence, H2 accepted.

#### H3: There is an impact of demographic attributes on emotional resilience

To test the impact of demographic attributes, the following summaries have drawn and shown in the tables. (a) **Case Processing Summary:** This provides the distribution of responses for the dependent variable (Student Emotional Resilience) and the predictor variables (Gender, Course Study). Most students fall into the "Sometimes" and "Rarely" categories for emotional resilience, with a majority being male and undergraduate students as shown in *table-8*.



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1 di	Sie 8. lesuit of Case Floc	essing	Summary
			Marginal
		Ν	Percentage
Student	Always	6	2.9%
Emotional	Often	26	12.5%
Resilience	Sometimes	87	41.8%
	Rarely	85	40.9%
	Never	4	1.9%
Gender	FEMALE	58	27.9%
	MALE	150	72.1%
Course	UNDERGRADUATE	178	85.6%
Study	POSTGRADUATE	30	14.4%
Valid		208	100.0%
Missing		0	
Total		208	

Table 8: result of Case Processing Summary

**Model Fitting Information**: As interpreted in the *table-9*, the -2 Log Likelihood of the final model is 68.758, with a Chi-Square value of 5.539 and a significance level of .136. Since the p-value is greater than 0.05, the model is not significantly different from the null model, suggesting that the predictors do not explain the variation in emotional resilience significantly.

	•	T			
	-2	Log	Chi-		
Model	Likelihood		Square	df	Sig.
Intercept Only	74.296				
Final	68.758		5.539	3	.136
Link function: Logit.					

Table 9: result of Model Fitting Information

**Goodness-of-Fit:** Both the Pearson and Deviance Chi-Square tests have p-values greater than 0.05, as shown in the *table-10* indicating that the model fits the data well.

	Chi-Square	df	Sig.				
Pearson	31.128	25	.185				
Deviance	29.635	25	.238				
Link function: Logit	•						

Table 10: result of Goodness-of-fit

**Pseudo R-Square:** The values for Cox and Snell, Nagelkerke, and McFadden's pseudo R-squared are quite low as shown in the *table-11* suggesting that the model explains only a small portion of the variance in emotional resilience.



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Table-11. Tesuit of I seudo K-square					
Cox and Snell	.026				
Nagelkerke	.029				
McFadden	.011				
Link function: Logit.					
Nagelkerke McFadden Link function: Logit.	.020 .029 .011				

**Parameter Estimates:** The Wald test is used to test the significance of individual coefficients in the model shown in *table-12*.

The thresholds for Student Emotional Resilience levels 1 to 4 have varying degrees of significance, with level 4 being significant (p = .003). The coefficient for age group is not significant (p = .994), suggesting no impact of age group on emotional resilience. The coefficients for Gender and Course Study are also not significant (p = .543 and p = .289, respectively), indicating no significant impact of these variables on emotional resilience.

		Esti-	Std.	Wald	df	Sig.	95%	Confi-
		mate	Er-				dence Interval	
			ror				Lower	Upper
							Bound	Bound
Threshold	[Student ER=1]	-2.735	1.597	2.933	1	.087	-5.865	.395
	[Student ER=2]	897	1.557	.332	1	.565	-3.949	2.156
	[Student ER=3]	1.137	1.558	.532	1	.466	-1.918	4.191
	[Student ER=4]	4.800	1.636	8.611	1	.003	1.594	8.006
Location	Age group	.006	.757	.000	1	.994	-1.479	1.490
	[Gender=0]	.177	.291	.370	1	.543	394	.748
	[Gender=1]	$0^{\mathrm{a}}$			0			
	[Course	.895	.844	1.125	1	.289	759	2.549
	Study=1]							
	[Course	0 <sup>a</sup>			0			
	Study=2]							
Link function: Logit.								
a. This parameter is set to zero because it is redundant.								

Table 12: result of Parameter Estimates

**Test of Parallel Lines:** The test of parallel lines has a p-value of .009, which is less than 0.05 shown in the *table-13* suggesting that the assumption of proportional odds is violated. This means that the relationship between the predictors and the log odds of the outcomes is not the same across response categories.



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	-2 Log	Chi-				
Model	Likelihood	Square	df	Sig.		
Null Hypothesis	68.758					
General	46.697	22.061	9	.009		
The null hypothesis states that the location parameters (slope						
coefficients) are the same across response categories.						
a. Link function: Logit.						

Table 1	3: result	of Test	of Parallel	Lines <sup>a</sup>
---------	-----------	---------	-------------	--------------------

In summary, the ordinal logistic regression analysis suggests that demographic attributes (gender, course of study, and age group) do not have a significant impact on the emotional resilience of students. However, the violation of the proportional odds assumption indicates that the relationship between predictors and outcomes may differ across categories of the response variable, which should be taken into consideration when interpreting the results and hence, H3 rejected.

#### 5. Summary of the Study:

Emotional intelligence and self-efficacy have been found to be significant predictors of student resilience, especially in the context of online learning during the pandemic (Ainiyah et al., 2021). Studies have identified various predictors of students' wellbeing, including lifestyle changes, COVID-related concerns, physical health status, and protective psychological factors like resilience and emotional support (Liu et al., 2021). This study consists of 30 items, excluding demographic variables, tested for reliability using the AEIOU empathy framework. The Cronbach's alpha values for activities, environment, interactions, objects, and user (self) indicate best internal consistency, indicating confidence in using these scales to assess emotional resilience. The t-test is employed to determine statistically significant differences between male and female students, with Levene's Test for Equality of Variances showing greater than 0.05 significance for all categories. There are no statistically significant differences between male and female students' understanding of emotional resilience in any of the evaluated categories. Undergraduate and postgraduate students showed significant differences in total emotional resilience that favors undergraduate students. The ANOVA results for emotional resilience among students in different age groups showed F-values for activities, environment, interactions, objects, and users (SELF), with p-values below 0.05 in only two categories. The overall F-value for student emotional resilience was 2.922, with a p-value of 0.056, suggesting no meaningful difference. The correlation test results suggest that there are significant positive relationships between the selected emotional resilience measures and self-esteem, but no significant difference was found in the overall emotional resilience measure. In conclusion, the study highlights the importance of external factors and circumstances in shaping emotional resilience among students and further emphasizes the enhancement of the most affecting factors. Understanding the predictors and mediating effects of resilience can inform targeted interventions to support students' emotional well-being and enhance their ability to cope with stress and adversities.

#### 6. Limitations & Future Scope:

The study's conclusions may be compromised due to constraints in the sample size and its representativeness, which could potentially bias the results. Increasing the size of the sample and including a wider range of participants would improve the potential to apply the findings to a broader population.



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Due to the reliance on self-reporting, there is a potential for bias in participants' replies when measuring emotional resilience, which might result in mistakes when interpreting the findings. Furthermore, the cross-sectional form of the study restricts its capacity to show a causal relationship between demographic determinants and emotional resilience. Conducting longitudinal research would offer a more thorough comprehension of these interactions as they evolve over time. Although the study took into account certain demographic parameters, such as gender, education level, and age, it did not examine other important variables, such as socioeconomic status, cultural background, and geographical region. By incorporating these variables, a more comprehensive knowledge of how demographics affect emotional resilience can be obtained. For future research, performing longitudinal studies would enable researchers to monitor alterations in emotional resilience over a period of time and gain a deeper comprehension of the enduring impacts of demographic factors. Incorporating qualitative methods, such as interviews or focus groups, alongside quantitative data, would provide more profound insights into students' experiences of emotional resilience and the ways in which demographic characteristics intersect with their strategies for resilience. Subsequent studies could conduct interventions targeting the improvement of emotional resilience in students from various demographic backgrounds to validate the results and offer practical implications for educational institutions. Although there has been considerable advancement in studying empathy in educational environments, there are still important areas that require additional investigation. Future research should give priority to conducting qualitative and quantitative inquiries using suitable empathy methodologies to examine the root causes of issues faced by graduate students and build structured frameworks for empathy education to enhance students' empathic abilities.

#### **Conflict of Interest:**

The authors declare that there is no conflict of interest regarding the publication of this paper. All financial, personal, or professional affiliations that could potentially influence the content, interpretation, or outcomes of this work have been fully disclosed. No competing interests exist that could have appeared to influence the work reported in this manuscript.

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Dr. Aruna Kumari Nuthanapati, is an Assistant Professor in Management Studies in the Department of Management at VNR Vignana Jyothi Institute of Engineering & Technology, Hyderabad. She has over 24 years of experience, out of which 14 years in teaching, 10 years in research and 10 years in administration. She has completed her master's in Business Administration with the specialization of finance & human resource from School of Management Studies, JNTUH in the year of 2011 and completed Ph.D from the same University in Education Management in 2017. She has also completed a PG Diploma in "Innovation and Design Thinking" from MIT Sloan School of Business, USA in the year 2018. She is teaching all business management and accounting subjects along with design thinking, happiness & wellbeing ancient wisdom, innovation & entrepreneurship, etc. Along with academic responsibilities, she has published 16 research papers in various indexed journals and conferences and got best paper award too. She has participated in over 60+ events such as conferences, workshops, bootcamps, FDPs, Symposiums, Training Programs, etc. She has been acquired over 15+ course certifications from MOOCs, NPTEL, Coursera, Udemy, etc. She has delivered 12+ expert lectures in her field of her expertise. She is a core team member in "Centre for Presencing and Design Thinking". She is one of the core member in creating innovative practices in teaching and learning methodologies in the institute.

## Annexure-1 QUESTIONNAIRE

		Responses					
Category	Question	Neve	Rarel	Some-	Of-	Al-	
		r	У	times	ten	ways	
(A)	I am feeling stressful and low						
ACTIVI-	when I am unable to perform						
TIES	the activities						
	1. Attend the college or class on						
	time						
	2. Maintain required percent-						
	age of attendance						
	3. Learn better among my						
	classmates						
	4. Have low performance in ac-						
	ademics						
	5. Participate in course projects						



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	6 Participate in other events in		
	and out of college		
	7. Pursue my hobbies continu-		
	ously		
(B) ENVI-	I feel dissatisfaction & stress-		
RON-MENT	ful about my surrounding en-		
	vironment of:		
	8. My living area		
	9. My Home		
	10. My Institute Campus and		
	facilities		
(C)	I feel alone and unsafe when I		
INTERAC-	am with:		
TIONS	11. All Family Members		
	12. Mother and Father only		
	13. Only Mother		
	14. Only Father		
	15. Relatives & Neighbours		
	16. Friends		
	17. Peer-to-Peer		
	18. Teachers		
	19. Senior Students or Alumni		
	20. Professional experts		
<b>(D)</b>	I dislike what I have and I		
OBJECTS	have more expectations on:		
	21. Pocket Money		
	22. Personal space and comfort		
	23. Electronic Devices		
	24. Means of Transport		
<b>(E)</b>	I Perceive myself as weak in:		
USER	25. Controlling my emotions		
(SELF)	26. Showing right emotion on		
	right time		
	27. Improving emotional bal-		
	ance		
	28. Maintaining positive atti-		
	tude		
	29. Good behaviour		
	30. Good language & Commu-		
	nication skills		