



## Psycho-social Determinants of Achievement Motivation in Gender Diverse Youth: A Comparison of Male, Female and Non-Binary Individuals

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### ABSTRACT:

The goal of this study is to examine how students' motivation for academic achievement is affected by resilience, depression, behavioral vs. emotional engagement, and meta-cognitive awareness. Previous studies have emphasized the predictive value of students' cognitive and mental abilities on their academic achievement. Uncertainty surrounds the functions of behavioral engagement and resiliency. The study employed a correlational research design, and  $N=425$  participants (200 male, 125 female and 100 non-binary) between the age range 18-30 years ( $M=24.31$ ,  $SD=1.21$ ), were chosen through convenient sampling. The Hamilton Depression Inventory, the Meta-cognitive Awareness Scale, the Brief Resilience Scale, the Engagement vs. Disaffection with Learning Questionnaire, and the achievement motivation scale were used to collect the data. The findings demonstrate a positive relationship between resilience, emotional engagement, and meta-cognitive awareness and academic success. However, there was a significant negative association between depression and behavioral engagement and academic achievement. Furthermore, compared to their male and female counterparts who scored low on depression and further displayed poorer scores on resilience, meta-cognitive awareness, behavioral and emotional engagement, non-binary students demonstrate lower scores on resilience, meta-cognitive awareness, behavioral and emotional engagement, high orientation towards success and achievement. Additionally, these findings have raised the need of providing supportive interventions aimed at improving achievement motivation and associated outcomes for non-binary individuals.

**Key Words:** *Resilience, Gender Differences, Non-Binary Individuals, Academic Achievement, Behavioral Engagement, Emotional Engagement, dummy coding*

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## 1. Introduction

Numerous obstacles confront college students and can have a big impact on their academic performance. These difficulties may come in the form of time management issues, money problems, mental health problems, and more (Kotera et al., 2021). For college students to excel academically, it is imperative that they possess the aptitude and means to demonstrate resilience and effectively address these challenges (Akeman et al., 2020). Kim et al. (2021) reported that resilience is marked for having a significant impact on academic achievement of students and further it empowers them to handle academic pressures and challenges in a more efficient manner.

Research has also shown that male, female, and non-binary students often encounter challenges in the academic environment mainly due to parental expectations, cultural norms associated with academic struggles in addition to their individual differences (Yu et al., 2019). It is imperative to note that students may possess diverse motivations associated with their academic achievement. Specifically, Oinas et al. (2022) reported that students identifying themselves as being non-binary may be driven by factors that emphasize their uniqueness, societal equity, need for personal growth and autonomy and thus may exercise these traits within their academic environments and circles.

In varying academic settings including university class rooms and the larger educational systems in general, resilience has been studied as having an association with academic achievement (Brewer et al., 2019). Wu et al. (2020) also identified how promoting resilience can lead to better educational outcomes. Foster et al. (2020) also confirmed that resilient students are able to manage their academic routines, challenges, stress and associated emotions in a more balanced manner in comparison to students who score low on resilience. Lyvers et al. (2020), however, argued that there may be factors in addition to resilience that determine positive academic outcomes including behavioral and emotional engagement.

Ahmed et al. (2020) found that depression was highly prevalent across different academic settings and that students belonging to underprivileged groups were at a higher risk of experiencing it. Concorada et al. (2019) and Wang et al. (2022) also found that though desire for academic achievement continues to remain high in a number of students, it is imperative to determine how their willingness towards behavioral and emotional engagement in the classroom and cognitive capabilities impact their academic pursuits. Banerjee et al. (2019) also argued that meta-cognition, marked by the capacity to assess and control one's own thinking and mental operations in students should be assessed especially in terms of how they impact academic achievement and associated educational outcomes among students.

Wilkinson et al. (2021) analyzed the educational accomplishments of young individuals with various gender identities using a dataset that encompasses the entire nation. The dataset was acquired from the High School Longitudinal Study completed in 2009. The study found no noticeable disparities across genders, indicating that non-binary kids did not face any disadvantages in comparison to their male and female counterparts. Oinas et al. (2022) found that non-binary students without self-regulation abilities experienced subpar academic conditions in remote learning settings. Both male and female students encountered increased amounts of social assistance throughout their academic pursuits, but non-binary students expressed feelings of





seclusion. Exceptional academic achievement was attained by students who exhibited elevated levels of self-regulation, active engagement, social support, successful collaboration, and peer learning.

Anjomshoaa et al. (2020) studied the effects of academic motivation, behavioral and emotional engagement on academic performance and found that students who scored high on behavioral and emotional engagement along with meta-cognition showed better academic performance. In addition, the results showed that students who practiced meta-cognition more actively reported better mental health outcomes.

Nonetheless, Chan and Suen (2023) reported that educational outcomes and performance of non-binary students were generally low across a wide range of academic settings primarily due to higher levels of victimization and discrimination. The findings, however, showed that non-binary students having higher levels of social support from peers, teachers, and parents and those who studied across gender diverse educational environments reported better academic performance.

The relevant literature has also shown that though both male and female students can experience depression and low motivation but recent research evidence indicates that non-binary individuals may experience higher levels of depression in comparison to cisgendered individuals, which can be further attributed to minority stress, gender dysphoria as well as discrimination (Smith-Johnson, 2022). Though limited research specifically examines non-binary people's motivation for achievement, however, some research contends that non-binary people may show a range of motivations influenced by their distinct gender identities and aspirations.

### **Purpose of the Study**

In view of the above, it has been ascertained that gender identity may significantly impact mental health, academic standing, and cognitive performance of students. Understanding the differences between male, female, and non-binary students in terms of depression, resilience, meta-cognition, behavioral engagement, and academic achievement is crucial for creating targeted interventions and support systems. This research therefore aims to understand the factors affecting students' academic achievement and overall well-being. The analysis further reveals a gap in literature on this area in Pakistan, where students of diverse genders, including non-binary individuals, face social stigma, exclusion, limited access to education, and limited employment prospects. The research also aimed to assess the challenges and benefits faced by male, female, and non-binary students in terms of mental health, meta-cognition, behavioral and emotional engagement and how these factors impact academic achievement in students.

### **Objectives of the Study**

- To assess the role of resilience, behavioral and emotional engagement, and depression in impacting achievement motivation in male, female, and non-binary university students
- To assess gender differences among university students on resilience, behavioral engagement, emotional engagement, depression, and achievement motivation

### **Hypotheses**

- Resilience, behavioral engagement, emotional engagement, depression, and meta-cognitive awareness would be significantly associated with academic achievement





- Non-binary students would report lower scores on resilience, meta-cognitive awareness, behavioral, achievement motivation along with higher scores on depression in comparison to male and female students.
- Resilience, depression, behavioral engagement, emotional engagement, depression, and meta-cognitive awareness would predict achievement motivation

## 2. Method

### Participants

For the purpose of examining the correlation among resilience, meta-cognitive awareness, behavioral engagement, emotional engagement, depression and achievement motivation, convenient sampling approach was used in the selection of  $N=425$  (200 male, 125 female and 100 non-binary) university students in the age range of 18 to 30 years ( $M=24.31$ ,  $SD=1.21$ ). The sample size was deemed sufficient as per G power analysis with 95 % confidence intervals to achieve a sufficient effect size.

### Instruments

#### Hamilton Depression Inventory (HDI)

Hamilton (1960) developed the HDI to assess and quantify, the level of depression, and associated symptoms. It is marked for being a widely used tool for assessing the severity of depression in clinical and other populations. It comprises a number of questions in terms of which type of individuals are required to report their feelings and behaviors over the past week (Williams et al., 2008).

#### Brief Resilience Scale

The Brief Resilience Scale (BRS) is viewed as being a reliable tool for assessing resilience which is defined as the capabilities of individuals to bounce back and recover from challenging situations and circumstances (Smith et al., 2008). Experts have also argued that the scale is beneficial in assessing how effectively individuals are able to overcome health related challenges. It includes a total of six items based on a Likert response format (Smith et al., 2008) with higher scores indicative of superior levels of resilience. The alpha reliability of the scale is .81.

#### The Meta-cognitive Awareness Scale

Shraw and Dennis (1994) developed the MAS for studying the level of metacognitive awareness among teachers. However, since then the scale has been adopted for study other population segments including students. The authors have argued that meta-cognition is central in terms of enhancing learning and academic achievement among students. The scale comprises a series of questions followed by response options ranging from strongly disagree to disagree. Tavakoli et al. (2012) has reported an excellent alpha reliability of the scale.

#### University Student Engagement Inventory

The USEI is a scale designed for assessing academic engagement among students through assessing their cognitive, behavioral, and emotional capabilities associated with





academic tasks and roles (Moroco et al., 2016). The scale comprises 15 items designed to assess the perspectives of students regarding extracurricular activities, community service and level of campus resource utilization. The scale has been demonstrated as having an acceptable alpha reliability (Assuncao et al., 2020).

**Achievement Motivation Scale**

The Achievement motivation Scale is a measure used to assess the level of academic achievement and associated accomplishments of students (Lynn, 1969). The scale assesses desire for academic superiority, success and need for achievement. The scale comprises 20 items on which respondents are required to indicate their level of agreement or disagreement with the statements. The alpha reliability of the scale is .82 (Cassidy & Lynn, 1991).

**Statistical Analyses**

The SPSS (Statistical package for social science) version 21.0 was used to analyze the data. Pearson Product Moment Correlation, Independent Sample t-test and MANOVA was used to assess the predictive associations and mean differences among the study variables. Dummy coding was used with reference groups with regards to gender, resilience, depression, meta-cognitive awareness, behavioral engagement, and emotional engagement in accordance with the recommendations of Schepers (2016) who encouraged dummy coding of continuous variables.

**Procedure**

Approval for the study was sought through the Institutional Ethics Review Directorate of Education Colleges, Government of the Punjab, Higher Education Department. Data collection was done online through Google Forms. The link to the questionnaire was shared via various social media outlets including WhatsApp, Instagram, Facebook, and Twitter. Informed consent was sought from the participants. They were also assured about the confidentiality of their personal identifying information. A total of 425 participants completed the online forms. Following data collection, data analyses was done using aforementioned statistical interventions.

**3. RESULTS**

**Table 1**

*Psychometric Properties of Study Variables*

Variables	M	SD	A	No of items
Depression	41.06	7.15	.88	24
Resilience	22.50	11.23	.89	6
Achiev.Motivation	17.43	6.69	.81	30
BehaviEngage.	33.52	9.31	.91	15
Emot.Enga	39.34	10.21	.91	15
Metacog.Awareness	75.22	16.43	.88	40

*Note: PWB=psychological well-being, M= Mean, SD= Standard Deviation, α= Reliability coefficient*





Reliability analysis shows that behavioral and engagement subscales have the highest levels of reliability followed by scores on resilience, meta-cognitive awareness, depression and achievement motivation scale.

**Table 2**

*Associations among Depression, Resilience, Meta-cognitive Awareness, Behavioral Engagement, Emotional Engagement and Achievement Motivation*

Variables	I	II	III	IV	V	VI
I Depression	-	-.58**	-.47**	-.42**	-.39**	-.32**
II Resilience		-	.55**	.51**	.44**	.31**
III Meta. Awareness			-	.39**	.32**	.42**
IV Behavior.Eng.				-	.31**	.34**
V Emotion.Eng						.44**
VI Achiev.Mot						

Note. \*\* $p < .01$ , \* $p < .05$ , behavior.eng=behavioral engagement, emotion.eng=emotional engagement, achiev.mot=achievement motivation

The assumptions for conducting a correlation analysis were performed and all criteria were met. Normality checks were performed to assess whether the data were normally distributed. The findings showed that depression had a significant negative association with resilience ( $r = -.58^{**}$ ,  $p < .01$ ), meta-cognitive awareness ( $r = -.47^{**}$ ,  $p < .01$ ), behavioral engagement ( $r = -.42^{**}$ ,  $p < .01$ ), emotional engagement ( $r = -.39^{**}$ ,  $p < .01$ ) and achievement motivation ( $r = -.32^{**}$ ,  $p < .01$ ). Resilience had a significant positive association with meta-cognitive awareness ( $r = .55^{**}$ ,  $p < .01$ ), behavioral engagement ( $r = .51^{**}$ ,  $p < .01$ ), emotional engagement ( $r = .44^{**}$ ,  $p < .01$ ) and achievement motivation ( $r = .31^{**}$ ,  $p < .01$ ). Moreover, meta-cognitive awareness was significantly and positively associated with behavioral engagement, emotional engagement, and achievement motivation.

**Table 3**

*Mean Differences for Gender on Depression, Resilience, Meta-cognitive Awareness, Behavioral Engagement, Emotional Engagement and Achievement Motivation*

Source	DV	df	MS	F	p	Partial $\eta^2$	Obs. Power
Gender	Depression	1	118.64	3.13	.000	.001	.42
	Resilience	1	125.73	3.16	.000	.001	.51





	Meta-cognitive Awareness	1	73.5	3.56	.000	.001	.49
	Behavioral Engagement	1	3.60	4.16	.000	.001	.06
	Emotional Engagement	1	4.84	3.21	.000	.001	.22
	Achievement Motivation	1	.62	2.03	.000	.001	.31
Error	Depression	423	16013.56	37.85			
	Resilience	423	16811.52	39.74			
	Meta-cognitive Awareness	423	8728.25	20.63			
	Behavioral Engagement	423	9030.78	21.34			
	Emotional Engagement	423	9609.39	22.71			
	Achievement Motivation	423	7687.84	18.71			

Note. For Gender Wilk’s  $\lambda (6, 418) = .98, p = .000, \text{partial } \eta^2 = .995.$

One way MANOVA was run conducted to see the impact of gender on Depression, Resilience, Meta-cognitive Awareness, Behavioral Engagement, Emotional Engagement and Achievement Motivation. It was found that gender had a significant main effect on gender  $F (1,423) = 3.13, p = .000,$  on resilience  $F (1,423) = 3.16, p = .000,$  on meta-cognitive awareness on  $(1,423) = 3.56, p = .000,$  on behavioral engagement on meta-cognitive awareness on  $(1,423) = 4.16, p = .000,$  on emotional engagement  $(1,423) = 3.21, p = .000$  and on achievement motivation  $(1,423) = 2.03, p = .000.$  Tukey’s HSD tests indicated that there were significant mean differences among male, female, and non-binary individuals (M Difference=21.60,  $p = .000$ ) with non-binary individuals scoring low on resilience, meta-cognitive awareness, behavioral engagement, emotional engagement, and achievement motivation with higher scores on depression in comparison to male and females.

**Table 4**

*Regression of Associations of Depression, Resilience, Meta-cognitive Awareness, Behavioral Engagement, Emotional Engagement with regard to Achievement Motivation*

	Hope for Success	Fear of Failure	Achievement Motivation Total
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Variables	$R^2$	$^A R^2$	$\beta$ [95 % CI]	$R^2$	$^A R^2$	$\beta$ (95 % CI)	$R^2$	$^A R^2$	$\beta$ (95 % CI)
Gender									
Male	.01	.01	-.11* [-.4.65, -1.91]	.00	.00	.01* [-1.48, -.68]	.00	.00	.03* [-1.32, -.41]
Female			-.09* [-.2.63, -1.89]	.00	.00	.01 [-1.18, .65]	.00	.00	-.03* [-1.32, .41]
Non-Binary			Reference			Reference			Reference
Resilience									
Low	.01	.01	-.10* [-.5.65, -1.91]	.00	.00	.01 [-1.28, .68]	.00	.00	-.03* [-1.52, .43]
High			Reference			Reference			Reference
Depression									
Low	.01	.01	-.13* [-.4.23, -1.32]	.00	.00	.04 [-1.14, .53]	.00	.00	-.03* [-1.33, .31]
High			Reference			Reference			Reference
Metacognitive Awareness									
Low	.01	.01	-.10* [-.5.65, -1.91]	.00	.00	.07* [1.38, .02]	.00	.00	-.08* [1.62, .05]
High			Reference			Reference			Reference
Behavioral Engagement									
Low	.01	.01	-.10* [-.5.65, -1.91]	.00	.00	.01* [-1.38, -.68]	.00	.00	-.03* [-1.62, -.45]
High			Reference			Reference			Reference
Emotional Engagement									
Low	.01	.01	.13* [-.3.23, -1.45]	.00	.00	-.01* [-1.22, -.63]	.00	.00	.03* [-1.31, -.33]
High			Reference			Reference			Reference

Table 4 reveals that there are strong associations between demographic variables, social support, and grit with physical health status among cardiac patients. Male ( $\beta = -.11, p < .05$ ) and female participants ( $\beta = -.09, p < .05$ ) have significantly lower scores on hope for success in comparison to non-binary students. Overall, students scoring low on resilience had lower hope for success ( $\beta = -.10, p < .05$ ), high fear of failure ( $\beta = .01, p < .05$ ) and lower achievement motivation ( $\beta = -.03, p < .05$ ). Lower scores on depression were associated with low hope for success, high fear of failure and an overall low achievement motivation. Similarly, students scoring low on meta-cognitive awareness had lower scores on hope for success, higher scores on





fear of failure and overall low achievement motivation. It was also found that students scoring low on behavioral and emotional engagement have higher scores on fear of failure and low scores on hope for success and an overall low achievement motivation. Thus, being a female, having higher levels of resilience, meta-cognitive awareness, and being behaviorally and emotionally engaged in studies are associated with high hope for success and a high overall achievement motivation.

#### 4. Discussion

The purpose of the current study was to determine how depression, resilience, meta-cognitive awareness, behavioral engagement, and emotional involvement impacted university students' academic success. The study also sought to determine whether non-binary students in developing nations like Pakistan possessed the necessary cognitive and emotional skills and aptitudes to demonstrate high achievement motivation. The results of this study reveal a wealth of information about how the aforementioned constructs affect motivation for achievement.

The findings confirm the hypothesis of substantial connections between resilience, depression, meta-cognitive awareness, behavioral and emotional involvement. These findings are consistent with the hypothesized relations demonstrating the importance of improving resilience, behavioral and emotional involvement, and meta-cognitive awareness. According to research, resilience and meta-cognitive awareness can both play an essential role in student accomplishment motivation (Park & Kim, 2022). According to the research, it is critical for kids to acquire resilience in order to cope with the obstacles of school and learning. However, depression has been shown in the research to have a disruptive and detrimental influence on achieving motivation. In general, depression has been linked to decreased levels of accomplishment motivation, and vice versa (Binali et al., 2021). Depressed people, for example, are less likely to pursue objectives or engage in activities that require risk-taking or hard effort (Martinez et al., 2021). Furthermore, depressed people may struggle to develop and keep objectives, as well as lack the energy or drive to complete chores. Furthermore, this research suggests that depressed people may have difficulties focusing on long-term objectives because they tend to linger on bad ideas and experiences.

Additionally, it is predicted that non-binary students would demonstrate higher depression scores while scoring low on resilience, meta-cognitive awareness, behavioral engagement, and emotional engagement. Cook et al. (2020) identified that gender identity continues to remain an important mediator of the determinants of academic achievement including social support, peer and teacher support along with higher levels of behavioral and emotional engagement. However, non-binary students are subject to discrimination and bullying across a wide range of academic settings especially across cultures having low tolerance for gender fluidity. Moreover, the academic experiences of non-binary students continue to remain consistent across a wide range of academic settings (Knutson et al., 2022). For example, Dimant et al. (2019) have reported poor mental health and educational outcomes among transgendered and non-binary students. Similarly, Hershner et al. (2021) reported higher levels of depression, poor resilience, and behavioral engagement among college and university students studying liberal arts and social sciences.





The relevant literature also show that non-binary and female students tend to be more resilient than males in university settings meaning they are better able to cope with difficult situations and rebound quickly (Farquhar-Leicester et al., 2022). Resilience is a critical factor in college success, as it helps students handle stress and stay motivated. Studies have also shown that females have stronger meta-cognitive skills than their male counterparts, meaning they are better able to manage and direct their own learning (De la Fuente et al., 2021). In terms of behavioral and emotional engagement in university settings, non-binary students tend to be less engaged than male and female students. Moreover, Billingsley et al. (2019) reported that varying forms of discrimination, such as verbal abuse, harassment, exclusion, and even physical violence, are frequently experienced by non-binary students. The institution itself, as well as peers and teachers, may engage in such discrimination. It may result in feelings of exclusion, low self-worth, and heightened susceptibility to mental health problems (Johnson et al., 2020). Finding sympathetic peers or mentors who can offer emotional support may be challenging for them. Additionally, a lack of institutional support, such as inclusive policies and resources, can exacerbate feelings of isolation and contribute to a negative social environment.

Studies have demonstrated that male and female students are more likely to participate in class, form study groups, and seek out help from professors when needed in comparison to non-binary students (Anderssen et al., 2020; Wang et al., 2020). They are also more likely to engage in activities that contribute to their overall college experience, such as attending student activities and forming meaningful relationships with peers and faculty (Wu et al., 2020). Overall, gender differences in terms of resilience, meta-cognition, and emotional and behavioral engagement in university students suggest that non-binary students continue to be at a disadvantage with regards to educational outcomes in comparison to their male and female counterparts.

### **Limitations and Suggestions**

There are some limitations associated with the research including unequal sample sizes and overrepresentation of male and female students in comparison to non-binary students. This limitation may have contributed towards inflation of effect sizes. However, despite these limitations, the current study contributes to understanding the predictive effect of gender, resilience, meta-cognitive awareness, and emotional engagement on achievement motivation among male, female, and non-binary university students. Foregoing in view, it is suggested that future studies be conducted with larger and more diverse sample sizes. It is also recommended to encourage more participation from non-binary students, a population which needs to be assessed within the Pakistani sociocultural and academic contexts. It is also recommended to conduct longitudinal studies to assess and track changes with regards to resilience, metacognitive awareness, behavioral and emotional engagement, and to find how these factors impact achievement motivation.

### **Implications**

- The findings show that enhancing resilience, meta-cognitive skills and healthy emotional engagement in non-binary and male/female students that they can experience less stress, anxiety and depression thus leads to improvements in their mental and emotional wellbeing





- At the community level, encouraging students to openly discuss their gender identity issues along with academic and mental health problems can contribute towards the development of a more open and inclusive society
- The research suggests that providing non-binary students with the opportunity to build resilience skills can help them better cope with stress and other difficult situations. Student support services should include programs and activities that empower students to build and strengthen their resilience. This could include providing access to mental health services, providing academic and career guidance, and offering stress management workshops.
- The research indicates that meta-cognitive strategies can be used to help students develop their capacity for critical thinking and problem-solving. Student support services should provide opportunities for students to learn and practice meta-cognitive strategies, such as self-reflection and goal-setting.
- It is through promoting acceptance and understanding of diverse gender identities within the societal and academic contexts that positive outcomes can be achieved
- The findings of the study further emphasize the importance of providing an inclusive environment for students of all gender identities and sociocultural backgrounds. Societal awareness and training of academicians and educators in this area can lead to the provision of equal opportunities for all students regardless of their gender identity

## 5. Conclusion

In conclusion, the findings showed that students who identify as being male or female showed higher levels of resilience along with enhanced emotional and behavioral engagement. Moreover, they scored high on meta-cognition and associated capabilities in comparison to non-binary students. The findings further showed that resilience, meta-cognition, behavioral and emotional engagement significantly predicted achievement motivation among university students. Non-binary students scoring low on resilience, meta-cognitive awareness, behavioral engagement, emotional engagement, and achievement motivation. It further shows the challenges that non-binary students may experience within academic settings in Pakistan primarily due to their high scores on depression and low scores on resilience, meta-cognition, and behavioral-emotional engagement. It is thus imperative to take steps to enhance inclusivity and provision of supportive structures for students belonging to different gender identities and to enhance the level of societal awareness in this regard.

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