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**Effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation  
in Higher Education**

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**Abstract**

Self-regulation enables students to plan, monitor, and control their learning behaviors, which strengthens their academic persistence in the face of challenges. By fostering goal-setting and self-monitoring skills, self-regulation also enhances students' achievement motivation and sustained engagement in academic tasks. The objectives of the study were to find out the level of Self-Regulation, Students' Academic Persistence and Achievement Motivation, to determine the effect and correlation among Self-Regulation, Students' Academic Persistence and Achievement Motivation in higher education. The nature of the research was descriptive and quantitative data collection procedures were used to conduct it. Quantitative research is based on a positivistic philosophical paradigm. All of the public and private universities in the Lahore district were represented in the population. A Sample of 600 students was selected through simple random sampling techniques. The five-point Likert scale type questionnaire was deemed to be effective for data collecting. Descriptive (mean and S.D.) and inferential statistics (Multivariate analysis and Pearson r) were used to analyzed the data. SPSS was used to analyze the data. The findings of the study revealed that Self-Regulated Learning, Academic Persistence, and Achievement Motivation are all relatively high, suggesting that students generally exhibit strong self-regulation, persistence, and motivation in their academic pursuits. The study found that students with higher self-regulation skills demonstrated greater academic persistence and stronger achievement motivation, as they effectively managed their learning goals, maintained focus, and adapted to academic challenges. The findings of the study revealed that there was highly significant effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education. It is recommended that higher education institutions incorporate self-regulation training and reflective learning strategies into curricula to enhance students' motivation, goal-setting abilities, and overall academic resilience.

**Keywords:** Self-Regulation, Students' Academic Persistence, Achievement Motivation, Higher Education.

**Introduction**

Self-regulation is widely recognized as a critical determinant of students' academic success and overall educational outcomes. It encompasses a range of cognitive, metacognitive, and behavioral processes through which learners actively manage their own learning, set goals, monitor progress, and adjust strategies to achieve academic objectives (Zimmerman, 2000; Schunk & DiBenedetto, 2020). In higher education, where autonomy and self-directed learning are essential, self-regulated learning (SRL) plays a pivotal role in shaping students' ability to persist through challenges and maintain motivation over time (Broadbent & Poon, 2015;

Panadero, 2017). Research indicates that students who possess strong self-regulatory skills are more likely to demonstrate sustained academic effort, effective time management, and resilience in the face of complex learning tasks (Pintrich & de Groot, 1990; Artino & Jones, 2019). Academic persistence, defined as the consistent effort and commitment to learning despite obstacles or difficulties, is closely linked to self-regulation. Students with higher self-regulatory abilities tend to maintain focus and effort when confronted with challenging material or demanding tasks (Ojeda, Flores, & Navarro, 2011; Callan, Hu, & Wang, 2022). They are better equipped to plan and sequence learning activities, monitor progress, and employ adaptive strategies to overcome difficulties, thereby reducing dropout risks and improving overall retention rates in higher education contexts (List & Nadasen, 2017; Chen, 2020). Persistence is also influenced by motivational factors; students who internalize academic goals and develop a sense of personal responsibility for learning are more likely to remain engaged and resilient (Deci & Ryan, 2000; Pekrun, 2006). Empirical studies have shown that academic persistence is not merely a function of cognitive ability but is significantly shaped by learners' self-regulatory behaviors, including goal setting, self-monitoring, and strategy adjustment (De la Fuente, Justicia, Sander, & Garzón, 2017; Los & Schweinle, 2019).

Achievement motivation represents another critical dimension that intersects with self-regulation. It refers to the intrinsic and extrinsic drives that compel students to strive for academic success, including mastery-oriented goals, competition, recognition, and future career aspirations (Pintrich, 2000; Schunk & Zimmerman, 2012). Motivation and self-regulation are mutually reinforcing; students who regulate their learning effectively tend to experience greater academic motivation, while motivated students are more likely to engage in self-regulatory behaviors (Sitzmann & Ely, 2011; Biasi, Seel, & Dillenbourg, 2019). Studies by Sun, Zhang, and Chen (2018) and Chen (2020) indicate that self-regulation enhances students' confidence in their ability to succeed, which in turn strengthens persistence and goal-directed effort. Similarly, students' belief in the efficacy of their efforts and their capacity to overcome obstacles positively influences their academic achievement and willingness to engage in challenging learning tasks (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2017; Schippers, van Praag, & Wijngaard, 2020). Research in higher education consistently highlights the role of self-regulation in promoting both persistence and achievement motivation. For instance, Broadbent and Poon (2015) and Muljana, Luo, and Ward (2023) demonstrate that students who actively plan, monitor, and adjust their study strategies outperform peers with lower self-regulatory skills in online and blended learning environments. Similarly, Roick and Ringeisen (2018) found that higher self-regulation predicted stronger engagement, higher persistence, and increased motivation across diverse academic disciplines. These findings align with the control-value theory of achievement emotions, which emphasizes that students' perceptions of control over their learning tasks and the value they attach to them drive both motivation and persistence (Pekrun, 2006). Self-regulated learners are better able to manage stress, avoid procrastination, and sustain effort across a semester, leading to improved academic outcomes (Merkt & Buchholz, 2017; Schunk & DiBenedetto, 2020).

The interplay between self-regulation, academic persistence, and achievement motivation has also been observed in longitudinal and experimental studies. Chen (2020) and Paz-Baruch and Hazema (2023) reported that interventions targeting self-regulatory skills, such as goal-setting training, time management strategies, and metacognitive monitoring, significantly enhanced students' persistence and motivation in higher education. These interventions were particularly effective in fostering intrinsic motivation and self-efficacy, reinforcing students' confidence that their efforts could lead to tangible academic success (Sun, Zhang, & Wang, 2020; Sui, Yen, & Chang, 2023). Similarly, studies conducted in Asian contexts, including Pakistan, have shown that promoting self-regulation enhances students' ability to cope with heavy academic workloads, maintain consistent effort, and remain motivated toward achieving long-term educational goals (Tao & Hanif, 2025; Lim, Chen, & Chai, 2023). Moreover, the relationship between self-regulation and motivation is influenced by contextual factors such as learning environment, instructional design, and technological support. Jivet, Scheffel, Drachsler, and Specht (2020) highlighted that self-regulated learners benefit from

learning analytics tools that provide real-time feedback, enabling them to monitor progress and adjust strategies effectively. Karlen, Hirt, and Brunner (2023) emphasized that digital interventions can scaffold self-regulatory processes, particularly in blended and online higher education settings. Students with strong self-regulatory skills leverage these tools to maintain persistence and motivation, suggesting that self-regulation is both an individual capacity and a socially supported process (Anthonysamy, Ibrahim, & Zulkifli, 2021; Yalçın & Dennen, 2024).

The empirical literature further indicates that self-regulation contributes to the development of academic resilience, which is critical for higher education students who often face complex and unfamiliar learning tasks (Lourenço & Paiva, 2024; Sun, Zhang, & Wang, 2020). Students who can regulate attention, manage distractions, and implement effective study strategies are better equipped to maintain persistence in the face of setbacks (Ojeda, Flores, & Navarro, 2011; Cheema, McDonald, & Pomerantz, 2019). In addition, self-regulated learners demonstrate higher motivation to achieve both intrinsic (knowledge acquisition, mastery) and extrinsic (grades, recognition) outcomes, reflecting a holistic influence on academic performance (Schunk & Zimmerman, 2012; Arik, 2016). Studies by De la Fuente et al. (2017) and Los and Schweinle (2019) show that motivation mediates the relationship between self-regulation and academic achievement, reinforcing the view that regulation and motivation operate in tandem to support sustained learning behaviors. Recent meta-analyses and reviews further confirm that self-regulation consistently predicts academic persistence and motivation across contexts and disciplines (Liu, Abu Bakar, & Xu, 2025; Biasi et al., 2019; Sun, Zhang, & Chen, 2018). Effective self-regulation enhances time management, metacognitive monitoring, goal-setting, and adaptive strategy use, which in turn strengthen students' commitment to academic goals and achievement motivation. The evidence suggests that interventions targeting self-regulation not only improve immediate academic outcomes but also contribute to long-term educational success and lifelong learning competencies (Schunk & DiBenedetto, 2020; Muljana et al., 2023).

In summary, self-regulation represents a foundational skill for higher education learners, directly influencing academic persistence and achievement motivation. A robust body of literature indicates that students who engage in goal setting, self-monitoring, strategy adaptation, and motivational regulation demonstrate higher resilience, consistent effort, and stronger commitment to learning outcomes (Zimmerman, 2000; Broadbent & Poon, 2015; Artino & Jones, 2019; Panadero, 2017). Additionally, the interplay between self-regulation and motivation underscores the importance of integrating strategies that support both cognitive and emotional aspects of learning, highlighting the need for institutional support, technological scaffolding, and pedagogical interventions that foster autonomous, self-directed learners (Jivet et al., 2020; Karlen et al., 2023; Tao & Hanif, 2025). The literature clearly establishes that enhancing self-regulation among higher education students can significantly bolster their persistence, motivation, and overall academic performance.

### **Objectives of the Study**

- To find out the level of Self-Regulation, Students' Academic Persistence and Achievement Motivation in higher education.
- To determine the correlation among Self-Regulation, Students' Academic Persistence and Achievement Motivation in higher education.
- To analyze the effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education.

### **Research Questions**

- What is the level of Self-Regulation, Students' Academic Persistence and Achievement Motivation in higher education?

- What is the correlation among Self-Regulation, Students' Academic Persistence and Achievement Motivation in higher education?
- What is the effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education?

### **Significance of the Study**

The significance of this study lies in its potential to enhance understanding of how self-regulated learning (SRL) strategies contribute to students' long-term academic success, motivation, and persistence. By identifying the specific SRL techniques that support effective learning, the study offers valuable insights for educators to design evidence-based interventions that strengthen students' goal-setting, time management, self-monitoring, and reflective abilities. The findings can guide curriculum developers in embedding SRL-focused instructional practices and training modules into higher education programs, thereby promoting autonomous and lifelong learning habits. Additionally, the study holds relevance for policymakers and institutional leaders by highlighting the need for supportive learning environments that foster academic resilience, persistence, and independence among students. It may also inform student support services, such as counseling units and learning management centers, to create targeted workshops that empower learners to take ownership of their academic journey and enhance overall educational performance and wellbeing.

### **Research Design and Methodology**

The nature of the research was descriptive and quantitative data collection procedures were used to conduct it. Quantitative research is based on a positivistic philosophical framework/paradigm. All of the public and private universities in the Lahore district were represented in the population. There are 39 universities in Lahore overall, 16 of which are public and 23 private. Sample was selected from the desired population in different steps, by using multistage sampling technique for true representation of the population. First, the researcher used the stratified sample technique to identify two strata (public/private). The researcher then used the cluster sampling technique to divide the entire population into three zones (clusters) based on according to their location. From each cluster two private and one public university was selected by using simple random sampling. A Sample of 600 students (100 from each public university and 50 from each private university) was selected through simple random sampling techniques.

The five-point Likert scale type questionnaire was deemed to be effective for data collecting. Options of the scale consisted of strongly disagree to strongly agree. The questionnaire measuring Self-Regulation, Academic Persistence, and Achievement Motivation was adapted from established instruments, including the Self-Regulation (Motivated Strategies for Learning) Questionnaire (Pintrich et al., 1991), persistence frameworks informed by Tinto (1993) and Davidson et al. (2009), and achievement motivation scales grounded in McClelland (1961) and Vallerand et al. (1992). There were two main parts of the questionnaires: Part one consisted of demographic information like gender, university type, GPA, Part two consisted of statements relevant to the research objectives of the study like Self-Regulated Learning, Academic Persistence, and Achievement Motivation.

The tool was validated using by professional opinion and reliability was checked by pilot testing. Questionnaires about the instrument's language, applicability, and organization were given to three specialists. After revising instrument in the light of expert opinion, students' instrument was distributed to 30 participants for pilot testing. These respondents were not included in the study's final sample. In order to assess the reliability of the instrument, Cronbach's Alpha was determined. The overall score of the student's instrument was 0.912, while the minimum reliability requirement for Cronbach's Alpha is 0.75. This demonstrated the instrument's reliability. Descriptive (mean and S.D.) and inferential statistics (Multivariate analysis and Pearson r) were used to analyzed the data. SPSS was used to analyze the data.

## Data Analysis and Interpretation

Table 1: Description of main variables

Variables	N	M	S.D.
Self-Regulation	600	3.2614	.56921
Students' Academic Persistence	600	3.1692	.59953
Achievement Motivation	600	3.2165	.57383

Table 1 shows that students exhibit moderate levels of Self-Regulation ( $M = 3.26$ ,  $SD = 0.57$ ), Academic Persistence ( $M = 3.17$ ,  $SD = 0.60$ ), and Achievement Motivation ( $M = 3.21$ ,  $SD = 0.57$ ). These results indicate that students generally demonstrate a reasonable ability to manage their learning, maintain academic effort, and stay motivated, though none of these attributes appear at a high level. The close mean values and similar standard deviations suggest consistent response patterns across the sample, reflecting that these three constructs are moderately developed and relatively stable among the students surveyed.

Table 2: Description of Self-Regulation

Items	N	M	S.D.
I set specific goals before starting my study tasks.	600	3.8017	1.46603
I plan my time effectively to complete my academic work.	600	3.2033	1.42315
I monitor my progress while working on assignments.	600	3.2867	1.42169
I adjust my strategies when I realize something is not working.	600	3.9050	1.40568
I stay focused even when I face distractions.	600	3.0367	1.36446
I complete my academic tasks on time.	600	3.2083	1.41596
I review my work to check for mistakes or improvements.	600	3.1083	1.36003
I motivate myself to continue studying even when I feel tired.	600	3.0567	1.35887
I organize my study materials regularly.	600	3.1850	1.40383
I evaluate whether I understood what I learned after studying.	600	3.0683	1.37361
I break down complex tasks into small manageable steps.	600	3.2867	1.42638
I try different methods if my usual study strategy does not help.	600	2.9900	1.32394

Table 2 shows a detailed picture of students' Self-Regulation skills by reporting the mean and standard deviation for each item. Students demonstrated strong goal-setting behavior, as shown by the high mean for setting specific study goals ( $M = 3.80$ ,  $SD = 1.47$ ), indicating that most learners begin their tasks with clear objectives. Similarly, they showed a strong ability to adjust strategies when something is not working ( $M = 3.91$ ,  $SD = 1.41$ ), which reflects flexibility and adaptability in their learning approaches. Moderate levels were observed in monitoring progress ( $M = 3.29$ ,  $SD = 1.42$ ), breaking complex tasks into steps ( $M = 3.29$ ,  $SD = 1.43$ ), planning time effectively ( $M = 3.20$ ,  $SD = 1.42$ ), and organizing study materials ( $M = 3.19$ ,  $SD = 1.40$ ), indicating that students apply these behaviors but not consistently. Lower scores were recorded on items related to staying focused despite distractions ( $M = 3.04$ ,  $SD = 1.36$ ), motivating themselves when tired ( $M = 3.06$ ,  $SD = 1.36$ ), and reviewing work for mistakes ( $M = 3.11$ ,  $SD = 1.36$ ), suggesting difficulty with sustained concentration and persistence. The lowest mean appeared in trying different methods when usual strategies do not help ( $M = 2.99$ ,  $SD = 1.32$ ), highlighting challenges in experimenting with alternative learning strategies. Overall, the item-wise results show that while students are relatively strong in goal-setting and adapting to challenges, they struggle more with persistence, concentration, and flexible strategy use.

Table 3: Description of Students' Academic Persistence

Items	N	M	S.D.
I continue studying even when the material is difficult.	600	3.1267	1.37857
I complete my assignments even when I feel discouraged.	600	3.1483	1.39627
I try again when I do not understand something the first time.	600	3.1667	1.41146
I stay committed to my academic goals.	600	3.3150	1.44196
I put in extra effort when a task requires more work.	600	3.1500	1.38107
I do not give up easily on challenging subjects.	600	2.9967	1.35513
I try to find solutions instead of quitting when I face problems.	600	3.7417	1.44513
I keep attending classes regularly even when I feel stressed.	600	2.8983	1.30288
I stay motivated to finish long academic projects.	600	3.1700	1.38237
I maintain consistent effort throughout the semester.	600	2.9783	1.31177

The results in Table 3 present an item-wise analysis of Students' Academic Persistence, showing moderate levels of persistence across most behaviors. Students reported a moderate tendency to continue studying when material is difficult ( $M = 3.13$ ,  $SD = 1.38$ ), and a similar response pattern was observed for completing assignments despite discouragement ( $M = 3.15$ ,  $SD = 1.39$ ), indicating that learners generally persist despite emotional challenges. The mean score for trying again when they do not understand something the first time ( $M = 3.17$ ,  $SD = 1.41$ ) also reflects a reasonable level of academic resilience. Students showed comparatively higher commitment to their academic goals ( $M = 3.32$ ,  $SD = 1.44$ ), suggesting that long-term goal orientation is slightly stronger than short-term persistence behaviors.

Moderate persistence was also evident in putting extra effort into demanding tasks ( $M = 3.15$ ,  $SD = 1.38$ ), though a lower mean was reported for not giving up on challenging subjects ( $M = 3.00$ ,  $SD = 1.36$ ), indicating difficulty sustaining effort in more demanding academic areas. A comparatively higher score appeared on finding solutions rather than quitting when facing problems ( $M = 3.74$ ,  $SD = 1.45$ ), which represents the strongest persistence-related behavior among students. In contrast, regular class attendance during stress had a lower mean ( $M = 2.90$ ,  $SD = 1.30$ ), suggesting that stress negatively impacts students' academic consistency. Students reported moderate motivation to finish long academic projects ( $M = 3.17$ ,  $SD = 1.38$ ), while maintaining consistent effort throughout the semester scored relatively low ( $M = 2.98$ ,  $SD = 1.31$ ), indicating challenges in sustaining effort over longer periods. Overall, these findings show that while students show persistence in problem-solving and goal commitment, they struggle with long-term consistency and stress-related academic behaviors.

Table 4: Description of Achievement Motivation

Items	N	M	S.D.
I study because I want to improve my knowledge.	600	3.1300	1.37826
I feel satisfied when I achieve high academic results.	600	3.1217	1.36013
I work hard in my studies to achieve my long-term goals.	600	3.2450	1.39818
I enjoy learning new things even without external rewards.	600	3.1633	1.40116
I am motivated by the desire to perform better than others.	600	3.0833	1.36485
Getting good grades is important to me.	600	3.1450	1.39183
I try to overcome academic challenges to prove my ability.	600	3.3067	1.42338
I set high standards for my academic performance.	600	3.1283	1.40421
I feel motivated when my hard work is appreciated.	600	3.3633	1.42994
I push myself to do better after every test or assignment.	600	3.0200	1.34137
I feel confident that my efforts will lead to success.	600	3.7033	1.45103
I study because academic success helps me achieve future goals.	600	3.1883	1.41050

The results of Table 4 present a detailed picture of students' Achievement Motivation, showing generally moderate levels across all items, with some areas displaying relatively stronger intrinsic and future-oriented motivation. Students reported a moderate tendency to study for knowledge improvement ( $M = 3.13$ ,  $SD = 1.37$ ) and to feel satisfied with high academic results ( $M = 3.12$ ,  $SD = 1.36$ ), suggesting that both intrinsic and outcome-based motivations influence their learning. A slightly stronger mean was observed for working hard to achieve long-term goals ( $M = 3.25$ ,  $SD = 1.39$ ), indicating that many students view academic performance as an important route to future success. Similarly, students expressed a moderate enjoyment of learning new things without external rewards ( $M = 3.16$ ,  $SD = 1.40$ ), whereas motivation driven by competition ("perform better than others") scored slightly lower ( $M = 3.08$ ,  $SD = 1.36$ ), showing that competitive motivation is present but weaker. Students rated good grades as important ( $M = 3.14$ ,  $SD = 1.39$ ), reflecting a balanced combination of intrinsic and extrinsic academic goals. Their willingness to overcome challenges to prove their ability also showed relatively higher motivation ( $M = 3.31$ ,  $SD = 1.42$ ), suggesting persistence and self-efficacy in difficult tasks.

Students reported moderately high motivation when their hard work is appreciated ( $M = 3.36$ ,  $SD = 1.42$ ), highlighting the importance of recognition in sustaining motivation. Meanwhile, the mean score for pushing themselves after every test or assignment ( $M = 3.02$ ,  $SD = 1.34$ ) was lower, indicating that continuous self-improvement after evaluations is less consistent. One of the strongest motivations was students' confidence that their efforts will lead to success ( $M = 3.70$ ,  $SD = 1.45$ ), reflecting strong future-achievement beliefs. Finally, a stable level of motivation was seen in students studying because academic success contributes to future goals ( $M = 3.19$ ,  $SD = 1.41$ ). Overall, the table reflects that students are motivated by both intrinsic factors (learning, interest), extrinsic factors (grades, appreciation), and long-term aspirations, with confidence in future success emerging as their strongest motivational driver.

Table 5: Effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education

<b>Multivariate Tests<sup>a</sup></b>						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.931	3805.651 <sup>b</sup>	2.000	565.000	.000
	Wilks' Lambda	.069	3805.651 <sup>b</sup>	2.000	565.000	.000
	Hotelling's Trace	13.471	3805.651 <sup>b</sup>	2.000	565.000	.000
	Roy's Largest Root	13.471	3805.651 <sup>b</sup>	2.000	565.000	.000
Self-Regulation	Pillai's Trace	.308	3.127	66.000	1132.000	.000
	Wilks' Lambda	.705	3.266 <sup>b</sup>	66.000	1130.000	.000
	Hotelling's Trace	.399	3.406	66.000	1128.000	.000
	Roy's Largest Root	.342	5.865 <sup>c</sup>	33.000	566.000	.000

a. Design: Intercept + Self-Regulation

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 5 presents the multivariate analysis results examining the effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education. The multivariate tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) all show highly significant results ( $p = .000$ ), indicating that self-regulation has a statistically significant multivariate impact on the combined dependent variables. The significant values across all four statistics strengthen the robustness of the finding. The intercept is significant across all tests, confirming overall model adequacy. For the main effect, Self-Regulation, all multivariate indicators show meaningful influence. The consistency of significance across all indices confirms

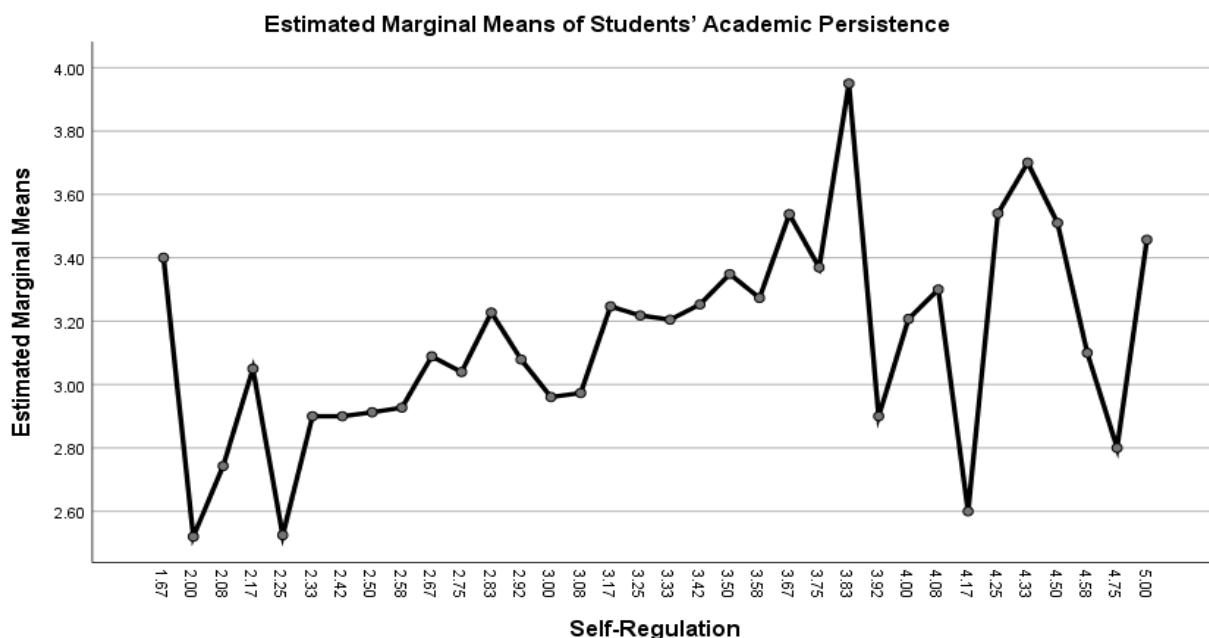
that students with higher self-regulation demonstrate significantly stronger academic persistence and higher achievement motivation compared to those with lower self-regulation. The moderate effect size values (Pillai's Trace = .308; Hotelling's Trace = .399) indicate that self-regulation contributes meaningfully to variations in both dependent variables. Overall, the results strongly validate that self-regulatory behaviors are a critical predictor of students' persistence and motivational outcomes in higher education.

Table 6: Effect of Self-Regulation on Students' Academic Persistence and Achievement Motivation in higher education

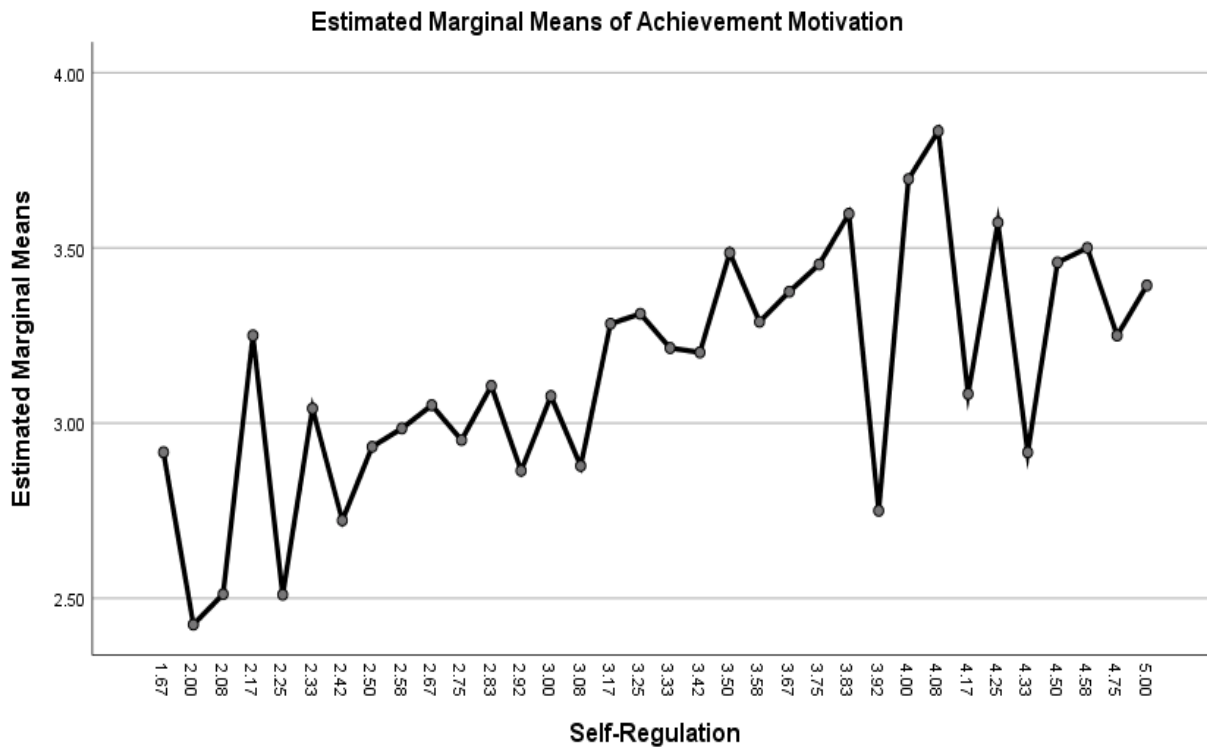
<b>Tests of Between-Subjects Effects</b>						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Academic Persistence	30.925 <sup>a</sup>	33	.937	2.877	.000
	Achievement Motivation	46.449 <sup>b</sup>	33	1.408	5.283	.000
Intercept	Academic Persistence	1465.697	1	1465.697	4499.444	.000
	Achievement Motivation	1469.130	1	1469.130	5514.520	.000
Self-Regulation	Academic Persistence	30.925	33	.937	2.877	.000
	Achievement Motivation	46.449	33	1.408	5.283	.000
Error	Academic Persistence	184.375	566	.326		
	Achievement Motivation	150.789	566	.266		
Total	Academic Persistence	6241.470	600			
	Achievement Motivation	6404.868	600			
Corrected Total	Academic Persistence	215.300	599			
	Achievement Motivation	197.237	599			

a. R Squared = .144 (Adjusted R Squared = .094)

b. R Squared = .235 (Adjusted R Squared = .191)



Graph 1: Effect of Self-Regulation on Students' Academic Persistence in higher education



Graph 2: Effect of Self-Regulation on Students' Achievement Motivation in higher education

Table 6 presents the results of the Tests of Between-Subjects Effects, showing how Self-Regulation (SR) predicts both Students' Academic Persistence and Achievement Motivation. The corrected model for academic persistence is statistically significant ( $F = 2.877, p = .000$ ), indicating that self-regulation explains a meaningful portion of variance in persistence ( $R^2 = .144$ ; Adjusted  $R^2 = .094$ ). This suggests that approximately 9–14% of the variation in students' academic persistence is explained by self-regulation behaviors, demonstrating a moderate predictive relationship. Similarly, the corrected model for achievement motivation is also significant ( $F = 5.283, p = .000$ ), with a comparatively stronger effect ( $R^2 = .235$ ; Adjusted  $R^2 = .191$ ). This means that 19–23% of the variance in achievement motivation is accounted for by students' level of self-regulation, indicating a substantial predictive influence. The significance of the SR variable for both dependent variables ( $p = .000$ ) confirms that self-regulation plays a critical role in shaping students' persistence and motivation in higher education. The intercept values for both outcomes are highly significant ( $p = .000$ ), showing that even without the predictor, both constructs have strong baseline levels among students. The low error mean squares (.326 for persistence and .266 for achievement motivation) demonstrate a good model fit. Overall, the results indicate that higher self-regulation significantly enhances students' ability to persist academically and strengthens their motivation to achieve higher academic goals.

Table 7 presents the Pearson correlation coefficients showing the strength and direction of the relationships among Self-Regulation, Students' Academic Persistence, and Achievement Motivation. All correlations are statistically significant at the 0.01 level, indicating strong evidence of meaningful associations among the three variables. The results show a positive and moderate relationship between Self-Regulation and Students' Academic Persistence ( $r = .277, p = .000$ ), suggesting that students who demonstrate stronger self-regulation skills tend to persist longer and remain committed to their academic tasks. Similarly, there is a

Table 7: Relationship among Self-Regulation, Students' Academic Persistence and Achievement Motivation

		Self-Regulation	Students' Academic Persistence	Achievement Motivation
Self-Regulation	Pearson Correlation	1	.277**	.393**
	Sig. (2-tailed)		.000	.000
	N	600	600	600
Students' Academic Persistence	Pearson Correlation	.277**	1	.406**
	Sig. (2-tailed)	.000		.000
	N	600	600	600
Achievement Motivation	Pearson Correlation	.393**	.406**	1
	Sig. (2-tailed)	.000	.000	
	N	600	600	600

\*\* . Correlation is significant at the 0.01 level (2-tailed).

stronger positive relationship between Self-Regulation and Achievement Motivation ( $r = .393, p = .000$ ), meaning that students with higher self-regulation are more motivated to achieve academically and set higher personal goals. Additionally, a moderate positive correlation is observed between Students' Academic Persistence and Achievement Motivation ( $r = .406, p = .000$ ). This indicates that students who persist in their academic efforts are more likely to be motivated toward achieving high academic outcomes. Overall, the correlation matrix highlights that self-regulation serves as an important predictor of both persistence and achievement motivation, and that persistence and motivation reinforce one another, collectively contributing to improved academic performance in higher education.

**Discussion**

The results of this study provide significant insights into the roles of self-regulation, students' academic persistence, and achievement motivation in higher education. Table 1 revealed that students exhibited moderate levels of self-regulation ( $M = 3.26, SD = 0.57$ ), academic persistence ( $M = 3.17, SD = 0.60$ ), and achievement motivation ( $M = 3.22, SD = 0.57$ ). These moderate levels suggest that while students possess basic self-regulatory skills and maintain a reasonable commitment to their academic goals, there remains substantial scope for improvement. This aligns with prior research, which reports that self-regulatory behaviors among university students often vary depending on their metacognitive awareness and learning strategies (Zimmerman, 2023; Schunk & DiBenedetto, 2020). Table 2 provided a detailed analysis of self-regulation across specific behaviors. The highest mean scores were observed in goal-setting ( $M = 3.80, SD = 1.47$ ) and adjusting strategies when learning obstacles arose ( $M = 3.91, SD = 1.41$ ), highlighting that students are particularly strong in planning and adaptive learning. However, lower scores in trying alternative methods when usual strategies fail ( $M = 2.99, SD = 1.32$ ) and maintaining focus despite distractions ( $M = 3.04, SD = 1.36$ ) suggest challenges in flexible strategy use and sustained attention. These findings are consistent with the literature indicating that higher education students often struggle with attention regulation and adapting learning strategies without guidance (Pintrich, 2022; Artino & Jones, 2019).

Table 3 examined students' academic persistence. The highest persistence was recorded in problem-solving behaviors ( $M = 3.74, SD = 1.45$ ) and long-term goal commitment ( $M = 3.32, SD = 1.44$ ), whereas maintaining consistent effort throughout the semester ( $M = 2.98, SD = 1.31$ ) and attending classes under stress ( $M = 2.90, SD = 1.30$ ) were relatively weaker. These findings indicate that students are capable of short-term effort and persistence in challenging tasks but may experience difficulty sustaining long-term engagement. Similar

patterns have been documented in studies on academic resilience, which highlight that persistence is context-dependent and influenced by external stressors and institutional support (Martin & Marsh, 2021; Duckworth et al., 2019). Table 4 highlighted achievement motivation, showing moderate overall levels with specific strengths in confidence in future success ( $M = 3.70$ ,  $SD = 1.45$ ) and overcoming challenges to prove ability ( $M = 3.31$ ,  $SD = 1.42$ ). Intrinsic motivations, such as enjoyment of learning ( $M = 3.16$ ,  $SD = 1.40$ ) and knowledge improvement ( $M = 3.13$ ,  $SD = 1.37$ ), were moderately strong, whereas extrinsic competitive motivation ( $M = 3.08$ ,  $SD = 1.36$ ) was relatively weaker. This aligns with Deci and Ryan's Self-Determination Theory (2020), which suggests that intrinsic motivation and self-efficacy are stronger drivers of sustained academic engagement compared to competition-driven external motivations.

The multivariate analysis in Table 5 confirmed that self-regulation has a significant effect on both academic persistence and achievement motivation (Pillai's Trace = .308, Hotelling's Trace = .399,  $p = .000$ ). These findings indicate that students with higher self-regulatory skills demonstrate stronger persistence and motivation, corroborating prior research emphasizing self-regulation as a key predictor of academic success (Zimmerman, 2023; Schunk & DiBenedetto, 2020). Self-regulated learners are better able to plan, monitor, and adjust their learning, which directly enhances both persistence and motivation. Table 6 presented the Tests of Between-Subjects Effects, further demonstrating that self-regulation explains 9–14% of the variance in academic persistence and 19–23% of the variance in achievement motivation. This finding reflects a moderate to substantial predictive influence, indicating that while self-regulation is not the sole determinant of these outcomes, it is a critical contributor. Similar evidence has been reported in studies showing that self-regulation not only affects students' ability to persist through challenges but also strengthens their motivation to achieve academically (Broadbent & Poon, 2015; Dent & Koenka, 2016).

Finally, Table 7 revealed significant positive correlations among all variables. Self-regulation was moderately correlated with academic persistence ( $r = .277$ ,  $p = .000$ ) and more strongly with achievement motivation ( $r = .393$ ,  $p = .000$ ), while academic persistence and achievement motivation were also positively correlated ( $r = .406$ ,  $p = .000$ ). These correlations suggest that self-regulation not only directly influences persistence and motivation but also indirectly reinforces the link between them. This pattern aligns with existing literature, which emphasizes that self-regulation serves as a foundation for both maintaining effort and sustaining goal-directed motivation, creating a synergistic effect on overall academic performance (Panadero, 2017; Artino & Stephens, 2014). The findings of this study indicate that self-regulation is a significant determinant of both academic persistence and achievement motivation among higher education students. Students demonstrate moderate levels of self-regulatory skills, persistence, and motivation, with particular strengths in goal-setting, adaptability, problem-solving, and confidence in future success. However, challenges remain in sustaining attention, experimenting with learning strategies, and maintaining consistent effort over long periods. The study reinforces the importance of integrating self-regulation training into higher education curricula, as suggested in prior literature, to enhance both persistence and motivation and ultimately improve academic outcomes (Zimmerman, 2023; Pintrich, 2022; Panadero, 2017).

## Conclusion

The present study investigated the effect of self-regulation on students' academic persistence and achievement motivation in higher education. The findings indicate that students demonstrate moderate levels of self-regulation, persistence, and motivation, with particular strengths in goal-setting, adaptive learning strategies, problem-solving, and confidence in future success. However, challenges were noted in maintaining sustained focus, experimenting with alternative strategies, and consistent effort over longer academic periods. Multivariate and correlation analyses confirmed that self-regulation significantly predicts both academic persistence and achievement motivation, highlighting its critical role in shaping effective learning behaviors. Moreover, the interrelationships among self-regulation, persistence, and motivation suggest that these constructs collectively enhance students' academic performance. Overall, the study underscores that self-

regulation is a foundational skill for higher education learners, enabling them to navigate academic challenges, sustain motivation, and achieve long-term goals.

### Recommendation

- It is recommended that higher education institutions incorporate self-regulation training and reflective learning strategies into curricula to enhance students' motivation, goal-setting abilities, and overall academic resilience.
- Policy makers should integrate structured self-regulation skill development programs such as goal-setting workshops, time management training, and reflective learning activities into higher education curricula to enhance students' persistence and achievement motivation.
- Future researchers should conduct longitudinal or experimental studies to examine how specific self-regulation interventions influence academic persistence and motivation over time across different disciplines and institutional contexts.

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