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The Relationship Between Achievement Motivation and Learning Self-Regulation with Academic Resilience in Female Secondary School Students

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A B S T R A C T

The purpose of this study was to investigate the relationship between achievement motivation and learning self-regulation with academic resilience among female students in the second level of secondary school. The research method was descriptive and correlational in nature. For data collection, a simple random sample of 160 female students from secondary schools in Ramsar was selected, and they completed the questionnaires of achievement motivation, learning self-regulation, and academic resilience. Data were analyzed using descriptive statistics, Pearson correlation coefficient, and stepwise multiple regression analysis. The results of the Pearson correlation indicated a significant positive relationship between achievement motivation and academic self-regulation with academic resilience. The stepwise multiple regression analysis showed that achievement motivation entered the equation first, followed by learning self-regulation, accounting for 26.10% and 5.70%, respectively, and a total of 31.80% of the variance in academic resilience among the students. Overall, the findings of this study demonstrated that achievement motivation and learning self-regulation are important variables in predicting academic resilience in female secondary school students.

Keywords: *academic resilience, academic self-regulation, achievement motivation.*

1. Introduction

In an educational landscape increasingly marked by academic pressures, emotional challenges, and external uncertainties, students' ability to maintain motivation and regulate their learning processes has emerged as a vital determinant of academic resilience. Academic resilience, defined as the capacity to successfully deal with academic setbacks, stress, and pressure, is increasingly regarded as a key factor influencing student performance and long-term achievement (Samuels & Woo, 2004; Tan et al., 2024). In this context, understanding how individual psychological traits—specifically, achievement motivation and learning self-regulation—contribute to students' academic resilience is essential for educators and policymakers aiming to create supportive learning environments.

Achievement motivation, which refers to an individual's persistent drive to achieve success and overcome obstacles, has long been recognized as a core component of academic success (Tamanaifar & Gandomi, 2011). According to expectancy-value theory, students' beliefs about their capabilities and the value they place on academic tasks influence their willingness to engage and persist in academic endeavors (Wigfield & Gladstone, 2019). Motivation not only directs effort but also determines the intensity and persistence of behavior in the face of challenges. Studies have shown that students with high levels of achievement motivation are more likely to set goals, maintain focus, and persevere through difficulties, thereby increasing their academic resilience (Okoro, 2020; Yang et al., 2021). For instance, the research conducted by Karaman and Watson (2017) indicates that students with stronger internal motivation display greater coping mechanisms and lower levels of academic stress, which are closely associated with higher levels of academic resilience (Karaman & Watson, 2017).

Equally important is learning self-regulation, a multidimensional construct encompassing goal-setting, strategic planning, self-monitoring, and self-reflection (Bouffard et al., 1995). Self-regulated learners actively control their learning processes, using metacognitive strategies to monitor progress and adjust behavior accordingly (Jokar, 2006; Kocdar et al., 2018). Research consistently highlights the relationship between self-regulation and academic resilience. For example, students with strong self-regulation skills are more likely to perceive academic challenges as manageable and to develop adaptive coping strategies, which strengthens their resilience in academic contexts (Mohan & Verma, 2020; Sabrillah et al., 2021). Yerdelen and Sungur (2019) further assert that classroom environments which foster self-regulation can buffer students against academic burnout and enhance their long-term academic adjustment (Yerdelen & Sungur, 2019).

The interplay between achievement motivation and learning self-regulation is particularly crucial in adolescent students, especially girls in secondary education who often face unique emotional, cognitive, and social challenges. The developmental phase of adolescence, marked by identity formation and increasing academic expectations, can amplify the need for internal resources like resilience and motivation (Anierobi & Ezennaka, 2016; Tan et al., 2024). Academic resilience in this context serves as a psychological buffer, enabling students to adapt positively despite the challenges associated with exams, peer competition, and socio-emotional transitions. Artuch-Garde et al. (2017) emphasize that self-regulated learners who possess higher levels of resilience tend to be more successful in sustaining academic engagement even in high-risk environments (Artuch-Garde et al., 2017).

Parental involvement has also been identified as a contextual variable influencing both academic resilience and motivational processes. According to Anierobi et al. (2024), students who report high levels of parental engagement are more likely to develop strong self-confidence and academic resilience, suggesting an interactive effect between personal and environmental factors (Anierobi et al., 2024). This view is supported by Abaidoo et al. (2021), who found that resilience and academic self-concept are important mediators in the relationship between achievement motivation and academic success (Abaidoo et al., 2021). These findings imply that while internal attributes such as motivation and self-regulation are critical, the surrounding educational and familial context can amplify or hinder their effects.

From a practical perspective, educators have begun to implement structured interventions aimed at fostering these psychological strengths. For instance, the Resilience Education Program (REP) has demonstrated promising results in enhancing both resilience and academic outcomes among at-risk student populations (Allen & Eklund, 2019). Likewise, instructional strategies that promote autonomy and goal-setting are increasingly used to improve students' self-regulatory capacity (Daumiller & Dresel, 2020; Trigueros et al., 2020). These interventions are grounded in empirical evidence showing that when students are equipped with both the motivational drive and the regulatory strategies

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

to navigate challenges, they are better positioned to succeed academically and emotionally (Ataii et al., 2021; Daumiller et al., 2021).

Additionally, the role of resilience has received growing attention in the context of rapidly changing educational conditions, including those driven by global crises such as the COVID-19 pandemic. According to Tan et al. (2024), latent profiles of academic resilience in university students revealed that higher resilience levels are associated with greater academic self-efficacy and adaptability to stressors (Tan et al., 2024). This supports the notion that academic resilience is not merely a reactive trait but a proactive strength that students can develop through training and supportive educational environments. Gamble and Crouse (2020) advocate for institutional strategies that build student resilience systematically, such as mentorship programs, skill-based workshops, and inclusive classroom practices (Gamble & Crouse, 2020).

Moreover, research shows that achievement motivation can act as a moderator in the learning process, especially in digital and multimedia learning contexts. Yang et al. (2021) found that students with high achievement motivation derived greater cognitive gains from pre-questioning strategies in video lectures, highlighting how motivation influences not just effort but also learning outcomes (Yang et al., 2021). Similarly, Snyder and Wormington (2020) argue that fostering achievement motivation may be key to reversing patterns of underachievement in gifted students (Snyder & Wormington, 2020). In this sense, integrating motivational frameworks into pedagogy holds promise for educational equity and engagement.

Cultural and regional contexts also play a role in shaping the effectiveness of self-regulation and motivation. Eskandari Dehdazi et al. (2018) in a study on Iranian female students found that academic resilience and self-regulation significantly predicted achievement motivation, confirming the interdependent nature of these constructs across diverse educational settings (Eskandari Dehdazi et al., 2018). Likewise, Trpcevska (2017) noted that self-efficacy and psychological well-being serve as mediators between resilience and academic motivation, reinforcing the psychological complexity of academic success (Trpcevska, 2017).

Despite the breadth of empirical support, questions remain regarding the directionality and causality of these relationships. While some studies suggest that achievement motivation precedes and enhances resilience, others argue for a reciprocal relationship, where resilient students become more motivated due to repeated experiences of overcoming adversity (Pattynama et al., 2019). Additionally, research by Mills (2021) examining the experiences of Black students in the U.S. higher education system emphasizes that academic resilience must also be understood in relation to systemic and structural factors, including campus climate and racial inclusivity (Mills, 2021). This points to the need for a more intersectional approach to academic resilience research, particularly among marginalized student populations.

Given the robust theoretical and empirical foundations discussed above, the current study aims to further examine the relationship between achievement motivation, learning self-regulation, and academic resilience in female secondary school students.

2. Methods and Materials

2.1. Study Design and Participants

The present study is an applied research in terms of its objective and a descriptive study in terms of its nature and method. Since it examines the relationships between variables, it falls under the category of correlational research. The statistical population of this study included all female students in the second level of secondary school in Ramsar during the 2023–2024 academic year. A sample of 160 students was selected. The sampling method used in this study was multi-stage cluster sampling. To conduct the study, four schools were randomly selected from among the female secondary schools. Then, from each school, two classes were randomly chosen, and the research questionnaires were distributed randomly among students in these 8 selected classes (160 students) who expressed willingness to participate. The questionnaires were collected after being completed.

2.2. Measures

Achievement Motivation Questionnaire (AMQ): The Achievement Motivation Questionnaire was developed by Hermans (1970) and consists of 29 items. The items are presented as sentence completions, each with 4 to 6 response options. The items are categorized into positively worded (items 1, 6, 8, 10, 15, 16, 20, 23, 27, 28, 29) and negatively worded (items 2, 3, 4, 5, 7, 11, 12, 13, 17, 18, 19, 21, 22, 24, 25, 26) statements. Scoring for positively worded items is as follows: (Option A = 1, B = 2, C = 3, D = 4); and for negatively worded items: (Option A = 4, B = 3, C = 2, D = 1). The minimum and maximum possible scores are 29 and

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

119, respectively. The validity of the questionnaire, based on construct validity reported by Hermans (1970), is considered appropriate. Its reliability was confirmed using Cronbach's alpha, reported as 0.86. In an Iranian sample, internal consistency for the entire test using Cronbach's alpha was reported as 0.82, and the test–retest coefficient after three weeks was 0.85.

Bouffard Learning Self-Regulation Questionnaire: This questionnaire was developed by Bouffard and colleagues (1995), and its standardization was carried out by Kadivar (2012). It consists of 14 items measuring two components: cognitive (items 3, 5, 8, 9, 10, 12, 13) and metacognitive (items 1, 2, 4, 6, 7, 11, 14). A higher score in each component indicates a stronger tendency to use that component. Items are rated on a 5-point Likert scale from "Strongly agree" (1) to "Strongly disagree" (5). Items 5, 13, and 14 are reverse-scored. The minimum and maximum possible scores range from 14 to 70. Higher scores indicate a greater tendency toward the use of that component. The overall reliability and the reliability of the cognitive and metacognitive subscales, measured using Cronbach's alpha, were reported as 0.71, 0.70, and 0.68, respectively. Jokar (2006) reported Cronbach's alpha coefficients for the three dimensions as 0.71, 0.55, and 0.50, respectively.

Academic Resilience Scale: This scale was developed by Samuels (2004) to assess the level of academic resilience in students. The questionnaire consists of 29 items covering three subscales: communication skills (items 5, 7, 10, 11, 13, 15, 23, 25, 26, 27, 28, 29), future orientation (items 4, 6, 8, 12, 16, 17, 18, 19, 20, 24), and problem-oriented/positive thinking orientation (items 1, 2, 3, 9, 14, 21, 22). Items 4, 5, 7, 10, 11, 15, 23, 27, 28, and 29 are reverse-scored. The questionnaire is rated on a five-point Likert scale ranging from "Strongly disagree" to "Strongly agree." The total score ranges from 29 (low academic resilience) to 145 (high academic resilience). Cronbach's alpha reliability coefficients for the Iranian student sample ranged from 0.63 to 0.77, and for university students from 0.62 to 0.76, indicating acceptable reliability for the three factors.

2.3. Data Analysis

In the present study, data analysis was conducted using both descriptive and inferential statistical methods. Descriptive statistics, including mean and standard deviation, were calculated to summarize the central tendency and dispersion of the variables. To examine the research hypotheses and assess the relationships among the variables, Pearson's correlation coefficient was used to determine the strength and direction of the associations between achievement motivation, learning self-regulation, and academic resilience. Furthermore, stepwise multiple regression analysis was employed to identify the predictive power of each independent variable (achievement motivation and learning self-regulation) on the dependent variable (academic resilience). All statistical analyses were performed using SPSS software, and a significance level of $p < .01$ was adopted for hypothesis testing.

3. Findings and Results

To analyze the data, descriptive statistics for the variables were first presented. Pearson's correlation coefficient and stepwise multiple regression analysis were used to test the research hypotheses.

Table 1

Descriptive Statistics of the Variables

Variables	N	Mean	Standard Deviation
Academic Resilience	160	74.94	13.85
Achievement Motivation	160	66.44	14.27
Learning Self-Regulation	160	41.78	8.67

It is observed that there is a significant positive relationship between achievement motivation and learning self-regulation with academic resilience.

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

Table 2

Pearson Correlation Matrix for the Study Variables

Variables	Academic Resilience	Achievement Motivation	Learning Self-Regulation
Academic Resilience	1	0.515	0.416
Achievement Motivation		1	0.360
Learning Self-Regulation			1

The results indicate that in the first step, achievement motivation entered the regression equation and predicted 26.10% of the variance in academic resilience. In the second step, learning self-regulation entered the regression equation and predicted an additional 5.70% of the variance in academic resilience. In total, the two variables predicted 31.80% of the variance in academic resilience.

Table 3

Summary of Stepwise Multiple Regression Analysis

Model	Predictors	R	R^2	Adjusted R^2	F	Sig.
1	Achievement Motivation	0.515	0.256	0.261	7.04	0.001
2	+ Learning Self-Regulation	0.571	0.326	0.318	14.23	0.001

It is evident that the computed F-values for both models are significant. Therefore, with 99% confidence, it can be stated that achievement motivation and learning self-regulation have the ability to predict students' academic resilience.

Table 4

ANOVA Results for Regression Significance

Source	SS	df	MS	F	Sig.
Regression (Motivation)	8095.62	1	8095.62	57.04	0.001
Residual	22424.87	158	141.93		
Total	30520.94	159			
Regression (Step 2)	9959.38	2	4979.69	38.02	0.001
Residual	20561.11	157	130.96		
Total	30520.94	159			

According to the regression results, the equations are as follows:

Model 1: $y = a + b_1x_1$

Substituting the coefficients, the prediction of academic resilience based on achievement motivation is:

Academic Resilience = 0.500 × (Achievement Motivation) + 41.73

Given the slope, the higher the achievement motivation, the higher the predicted academic resilience of students.

Model 2: $y = a + b_1x_1 + b_2x_2$

Substituting the coefficients, the prediction equation for academic resilience based on both achievement motivation and learning self-regulation is:

Academic Resilience = 0.407 × (Achievement Motivation) + 0.423 × (Learning Self-Regulation) + 30.20

According to this equation, students with higher achievement motivation and self-regulation in learning demonstrate higher academic resilience. Additionally, the standardized beta coefficients show that achievement motivation predicts 51.50% and learning self-regulation predicts 26.50% of the variance in academic resilience.

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

Table 5

Multiple Regression Coefficients for Predicting Academic Resilience

Criterion Variable	Model	Predictors	Unstandardized Coefficient (B)	Standard Error	Standardized Beta	t	Sig.
Academic Resilience	1	Constant	41.73	4.49		5.70	0.001
		Achievement Motivation	0.500	0.066	0.515	7.05	0.001
	2	Constant	30.20	5.29		5.97	0.001
		Achievement Motivation	0.407	0.068	0.420	5.97	0.001
		Learning Self-Regulation	0.423	0.112	0.265	3.77	0.001

4. Discussion and Conclusion

The findings of the present study revealed a significant and positive relationship between achievement motivation and academic resilience among female secondary school students. Specifically, achievement motivation accounted for 26.10% of the variance in academic resilience, and when learning self-regulation was added, the explained variance increased to 31.80%. These results underscore the importance of internal psychological factors in predicting students' ability to adapt successfully to academic challenges. The high beta coefficients of both achievement motivation and learning self-regulation indicate their strong predictive capacities. This aligns with the broader literature that conceptualizes academic resilience as a multifaceted construct that is significantly influenced by motivational and regulatory attributes (Samuels & Woo, 2004; Tan et al., 2024).

The observed strong correlation between achievement motivation and academic resilience is consistent with the findings of previous studies. Research by Tamanaifar and Gandomi (2011) emphasized that students with high levels of achievement motivation tend to set ambitious academic goals and persevere through academic difficulties, contributing to greater resilience (Tamanaifar & Gandomi, 2011). This is supported by the work of Karaman and Watson (2017), who noted that achievement motivation mitigates academic stress and enhances coping strategies, both of which are essential components of resilience (Karaman & Watson, 2017). Similarly, Yang et al. (2021) demonstrated that motivated students are more attentive and perform better in learning contexts, even when the material is challenging, due to their sustained cognitive engagement (Yang et al., 2021). This highlights how intrinsic motivational states not only initiate effort but also sustain it during adversity, reinforcing the connection between motivation and resilience.

Moreover, the positive association between learning self-regulation and academic resilience further supports the hypothesis that students who can manage their learning processes effectively are better equipped to withstand academic stressors. The present study found that self-regulation explained an additional 5.70% of the variance in academic resilience, beyond what was accounted for by motivation alone. This aligns with Bouffard et al. (1995), who asserted that students who employ goal-setting, self-monitoring, and adaptive feedback strategies demonstrate greater persistence and adaptive behaviors when encountering obstacles (Bouffard et al., 1995). Ataii et al. (2021) further validated that self-regulation indirectly enhances academic resilience by improving students' sense of competence and self-efficacy (Ataii et al., 2021). Mohan and Verma (2020) also emphasized that students with high self-regulatory capacity are more likely to transform academic pressure into a source of motivation, rather than defeat (Mohan & Verma, 2020).

These findings resonate with those of Artuch-Garde et al. (2017), who explored the interplay between resilience and self-regulation in Spanish youth at risk of social exclusion. Their results indicated that self-regulation is a protective factor that enables students to maintain academic functioning despite adverse circumstances (Artuch-Garde et al., 2017). Furthermore, Yerdelen and Sungur (2019) illustrated that supportive classroom environments that foster self-regulatory behavior contribute to students' resilience, particularly in science and mathematics learning, domains known for high levels of student anxiety (Yerdelen & Sungur, 2019). Taken together, the present findings confirm the robust association between self-regulatory strategies and resilience in diverse educational settings.

Importantly, this study also contributes to a growing body of research that emphasizes the interactive nature of achievement motivation and learning self-regulation. For instance, Daumiller and Dresel (2020) and Daumiller et al. (2021) reported that professionals and students who are simultaneously highly motivated and self-regulated exhibit greater engagement, learning gains, and emotional resilience

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

(Daumiller & Dresel, 2020; Daumiller et al., 2021). This duality is echoed in the theoretical model proposed by Wigfield and Gladstone (2019), in which motivational beliefs and self-regulatory processes are considered co-determinants of academic success (Wigfield & Gladstone, 2019). These models suggest that motivation supplies the drive while self-regulation offers the strategic tools for persistence, making their combination especially powerful for resilience.

Another valuable aspect of this study is its contextual relevance to female adolescents in secondary education. During this developmental phase, students face heightened emotional and cognitive demands. Anierobi and Ezennaka (2016) found that parental involvement, which often supports both motivation and self-confidence, significantly predicts academic engagement among adolescent girls (Anierobi & Ezennaka, 2016). The results of the present study are also in harmony with findings by Anierobi et al. (2024), who demonstrated that academic resilience is a strong predictor of student engagement when combined with motivational and familial support systems (Anierobi et al., 2024). In line with these results, Abaidoo et al. (2021) underscored the mediating role of academic self-concept and resilience in linking motivation to achievement, suggesting that educational outcomes depend on a constellation of internal traits and external supports (Abaidoo et al., 2021).

The implications of these findings are especially pertinent in today's rapidly changing and uncertain educational environments. For example, Trigueros et al. (2020) demonstrated that resilience serves as a buffer against academic anxieties, including mathematical anxiety, enabling students to maintain optimal performance under pressure (Trigueros et al., 2020). Tan et al. (2024) also identified multiple resilience profiles among nursing students and found that higher levels of academic resilience were associated with better adaptation and greater self-efficacy during stressful academic periods (Tan et al., 2024). These findings reinforce the importance of targeting both motivational and regulatory domains in fostering adaptive academic functioning.

The current study's findings also find support in the literature on instructional design and educational interventions. Gamble and Crouse (2020) advocate for structured institutional strategies, including resilience workshops and mentorship programs, to bolster student adaptability in post-secondary settings (Gamble & Crouse, 2020). Allen and Eklund (2019), in evaluating the Resilience Education Program (REP), reported significant improvements in students' emotional regulation and academic engagement after participation in structured resilience-based interventions (Allen & Eklund, 2019). Such programs illustrate the practicality of applying research insights to support students at scale.

Further, insights from sociocultural contexts are valuable. Mills (2021) highlights how perceptions of campus climate can mediate the relationship between motivation and resilience in Black student populations, suggesting that academic resilience is not just a matter of internal traits but also of institutional inclusivity and equity (Mills, 2021). Similarly, Okoro (2020) found that among Nigerian undergraduates, self-efficacy and achievement motivation were key predictors of academic engagement, suggesting that these constructs hold cross-cultural relevance (Okoro, 2020). Pattynama et al. (2019) also confirmed that self-regulation and resilience jointly predicted student engagement and reduced dropout intention, emphasizing their critical role in academic retention (Pattynama et al., 2019).

In sum, the current study affirms the significant predictive roles of achievement motivation and learning self-regulation in determining academic resilience among adolescent female students. The empirical support from a wide body of research lends credence to these findings and indicates the potential for targeted interventions to enhance these psychological traits. This study adds to the existing literature by emphasizing the combined influence of internal motivation and self-directed learning behaviors on students' ability to adapt and thrive in educational settings.

Despite its valuable contributions, this study is not without limitations. First, the cross-sectional design limits the ability to infer causality between the variables. Although significant associations were found, it cannot be concluded with certainty that motivation and self-regulation directly cause higher academic resilience. Second, the use of self-report questionnaires may introduce biases such as social desirability or inaccurate self-assessment. Third, the sample was restricted to female secondary school students from a specific geographic area, which limits the generalizability of the findings to other populations, including male students, students in other educational levels, or students from diverse cultural backgrounds.

Future studies should consider employing longitudinal designs to examine the development and interaction of motivation, self-regulation, and resilience over time. This would provide more robust evidence for causal relationships. Moreover, incorporating qualitative methods such as

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

interviews or focus groups could yield deeper insights into the lived experiences of students and how they perceive their resilience and motivation. Expanding the sample to include diverse demographic groups, including male students and students from different regions or socioeconomic backgrounds, would enhance the generalizability of the findings. Lastly, experimental studies evaluating the effectiveness of intervention programs designed to enhance motivation and self-regulation on academic resilience would offer practical insights for educational practice.

Educational institutions should prioritize the cultivation of achievement motivation and self-regulation strategies through structured programs and classroom practices. Teachers can incorporate goal-setting, time management training, and reflective exercises into their instruction to enhance students' self-regulatory capacities. Schools should also create emotionally supportive environments that validate students' efforts and build their confidence to face academic challenges. Counseling services can play a key role by providing resilience-focused workshops and one-on-one guidance tailored to students' psychological and emotional needs. Overall, a holistic approach that integrates motivational enhancement and self-regulation training can significantly foster academic resilience and promote student success.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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