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The Effect of Goal Orientation on Academic Achievement with the Mediating Role of Goal Regulation and Academic Beliefs in Upper Secondary Students

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ABSTRACT

This study aimed to investigate the effect of goal orientation on academic achievement among upper secondary students, with the mediating roles of goal regulation and academic beliefs. A descriptive correlational design was employed, involving a sample of 386 upper secondary school students in Tehran selected based on the Morgan and Krejcie sampling table. Data were collected using standard instruments: the Achievement Goal Questionnaire (Elliot & McGregor, 2001), the Goal Regulation Scale (Freund & Baltes, 2002), and the Academic Beliefs Questionnaire (Schunk & Pajares, 2001). Academic achievement was measured using GPA. Data analysis included Pearson correlation using SPSS-27 and Structural Equation Modeling (SEM) using AMOS-21 to test the mediating model and assess model fit through multiple fit indices. Results showed that mastery goal orientation had a significant direct effect on academic achievement ($\beta = 0.23$, $p = .004$), as well as indirect effects through both goal regulation ($\beta = 0.35$, $p < .001$) and academic beliefs ($\beta = 0.38$, $p < .001$), with a total effect of $\beta = 0.50$. Performance goal orientation negatively predicted academic achievement both directly ($\beta = -0.14$, $p = .021$) and indirectly via academic beliefs ($\beta = -0.15$, $p = .036$). The SEM model demonstrated good fit indices ($\chi^2/df = 2.01$, CFI = 0.96, RMSEA = 0.051), confirming the hypothesized mediation model. The findings underscore the importance of mastery-oriented goals and adaptive belief systems in enhancing academic performance. Goal regulation and academic beliefs play significant mediating roles, suggesting that interventions targeting these psychological constructs can promote academic success in high school students. Educational strategies should focus on fostering self-regulatory skills and positive academic beliefs to maximize goal-driven learning outcomes.

Keywords: Goal orientation; Academic achievement; Goal regulation; Academic beliefs; Structural equation modeling; High school students.

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Introduction

Academic achievement is a critical benchmark for evaluating students' success and the effectiveness of educational systems. It reflects not only learners' cognitive capabilities but also the interplay of psychological, motivational, and contextual factors. Among these, achievement goal orientation has emerged as a foundational construct that significantly influences learners' behavior, beliefs, and performance in educational settings. Achievement goal orientation refers to the reasons or purposes behind students' engagement in academic tasks, typically categorized into mastery-oriented and performance-oriented goals (1). These orientations shape how students approach challenges, persist through difficulties, and regulate their learning strategies, ultimately affecting their academic outcomes.

The growing body of research suggests that goal orientation plays a pivotal role in predicting academic success through its interaction with students' motivational and cognitive beliefs (2). Mastery goal orientation, for instance, has been associated with adaptive learning behaviors, deeper engagement, and sustained effort, whereas performance-oriented goals are often linked to surface-level learning and heightened anxiety in evaluative contexts (3, 4). In particular, students who adopt mastery-approach goals demonstrate higher resilience and self-directed learning behaviors compared to those with avoidance-oriented goals (5).

A key mediating factor in the relationship between goal orientation and academic achievement is goal regulation, which refers to how students adjust, pursue, and sustain their academic goals over time. Goal regulation encompasses the ability to select meaningful objectives, allocate cognitive and emotional resources effectively, and revise strategies when encountering obstacles (6). Students with higher self-regulatory capacities tend to exhibit superior academic performance because they align their motivational orientations with constructive learning behaviors. Research has shown that goal regulation strategies, such as compensation, optimization, and strategic selection, enhance students' academic persistence and adaptability, particularly in demanding educational environments (7).

Additionally, academic beliefs serve as another crucial intermediary linking goal orientation to performance. Academic beliefs encompass students' self-efficacy, epistemic beliefs, and value appraisals of learning tasks. These beliefs determine the extent to which students perceive themselves as competent, see value in their academic pursuits, and trust the structure of knowledge acquisition (8). For instance, students who believe that intelligence is malleable are more likely to endorse mastery goals and invest sustained effort in learning (9). In contrast, fixed beliefs about intelligence and low self-efficacy can diminish academic motivation and lead to disengagement. The interplay between goal orientations and academic beliefs has been well-documented in diverse cultural contexts, including Asian and Middle Eastern educational systems (10, 11).

In the Iranian educational context, the emphasis on high-stakes testing and competitive academic environments places additional pressure on students, which can exacerbate maladaptive motivational patterns if not buffered by strong goal regulation and constructive academic beliefs (12). As such, understanding how goal orientation impacts academic achievement through these mediating variables provides valuable insights into designing supportive educational interventions. Empirical findings in Iranian student populations confirm the relevance of this framework, highlighting the importance of fostering self-regulation and promoting adaptive goal orientations to enhance academic success (13).

Moreover, the COVID-19 pandemic and the resulting shift to online and remote learning environments have further underscored the need for internal motivational structures, such as goal regulation and academic beliefs, to compensate for reduced external regulation (14). During this period, students' self-regulatory skills and belief systems were found to be decisive in determining academic continuity and performance (15, 16). These findings reinforce the need to explore these constructs in contemporary secondary education.

Another dimension of this inquiry involves how students' achievement goals and beliefs develop in relation to the social and instructional environment. Research indicates that parental expectations, teacher support, and cultural beliefs about learning significantly shape students' goal orientations and epistemic frameworks (17, 18). In collectivist cultures, such as Iran, academic motivation is often intertwined with familial and societal expectations, suggesting that educational interventions must also consider the socio-cultural context of learners (19).

Gender and developmental stage also play a role in the formation and impact of goal orientations and academic beliefs. Studies suggest that females may be more inclined toward mastery goals and exhibit stronger self-regulatory behaviors, whereas males often gravitate toward performance-based orientations (20). Furthermore, early adolescence is a critical period for the formation of goal structures, making secondary school an ideal setting for studying these constructs and their effects on academic outcomes (2).

Despite the wealth of literature on achievement goal theory and self-regulation, gaps remain in understanding the complex mediation processes that link these constructs with academic achievement, particularly within non-Western educational settings. While studies have separately explored goal orientation, goal regulation, and academic beliefs, fewer have integrated these constructs within a unified model to predict academic achievement using structural equation modeling (SEM). This integrative approach is essential to unpacking the direct and indirect effects among these variables and identifying high-leverage intervention points (21, 22).

Furthermore, academic dishonesty, a growing concern in competitive educational systems, has been linked to maladaptive performance goals and low self-efficacy. Addressing such behaviors requires a deeper understanding of students' motivational profiles and belief systems (23). Promoting adaptive goals and constructive academic beliefs may serve not only to enhance achievement but also to foster academic integrity and well-being.

In sum, the current study aims to examine the relationship between goal orientation and academic achievement among upper secondary students in Tehran, with a focus on the mediating roles of goal regulation and academic beliefs.

Methods and Materials

Study Design and Participants

This study employed a descriptive correlational design to examine the relationships among goal orientation, goal regulation, academic beliefs, and academic achievement. The population consisted of upper secondary school students in Tehran. Based on Morgan and Krejcie's (1970) sample size table, a sample of 386 students was selected using stratified random sampling to ensure representation across different schools and academic disciplines. Participation was voluntary, and informed consent was obtained from all

participants. The inclusion criteria were being enrolled in upper secondary education (grades 10 to 12), aged between 15 and 18 years, and willingness to participate in the study.

Data Collection

To assess academic achievement, students' Grade Point Average (GPA) from their most recent academic semester was used as a standardized and reliable measure. GPA is a commonly accepted indicator of academic performance, reflecting students' cumulative achievement across subjects. This method has been validated in numerous educational studies and is particularly effective in the context of Iranian schools due to standardized grading systems and administrative reliability. Previous research in Iran has confirmed the validity and reliability of GPA as an outcome measure in studies focusing on cognitive, motivational, and emotional predictors of academic success.

Goal orientation was measured using the Achievement Goal Questionnaire developed by Elliot and McGregor (2001). This standardized tool includes 12 items and assesses four types of goal orientation: mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance. Each subscale contains 3 items, and responses are scored on a 7-point Likert scale ranging from 1 (not at all true of me) to 7 (very true of me). This tool has demonstrated strong internal consistency and construct validity in various international studies. In the Iranian context, its reliability has been confirmed with Cronbach's alpha values exceeding 0.70 for all subscales, and its validity has been supported by its significant correlations with academic motivation and self-efficacy in student populations.

Goal regulation was assessed using the Goal Regulation Scale designed by Freund and Baltes (2002), which evaluates self-regulatory strategies individuals use to manage goal pursuit. The scale consists of 15 items distributed across four subscales: selection, optimization, compensation, and loss-based selection. Items are rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The instrument has been psychometrically validated in several studies across different age groups. Its Persian version has been adapted and validated in Iranian adolescent populations, with confirmed reliability coefficients above 0.75 and acceptable factor structure, supporting its application in educational research on self-regulated learning.

Academic beliefs were measured using the Academic Beliefs Questionnaire developed by Schunk and Pajares (2001), which includes dimensions such as academic self-efficacy, learning value, and control beliefs. The instrument comprises 18 items rated on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), and includes three subscales: self-efficacy beliefs, task value, and outcome expectations. This scale has been widely used to assess students' beliefs about their capabilities and the importance of learning tasks. In Iran, its Persian version has been validated among high school students, with Cronbach's alpha values ranging from 0.78 to 0.86 for the subscales, and its construct validity supported through factor analysis and correlations with academic engagement and achievement variables.

Data analysis

Data analysis was conducted using SPSS version 27 and AMOS version 21. First, descriptive statistics were calculated to summarize demographic variables and scale scores. Pearson correlation coefficients were computed to assess the bivariate relationships between the independent variables (goal orientation), mediating variables (goal regulation and academic beliefs), and the dependent variable (academic

achievement). Then, to evaluate the proposed mediation model, Structural Equation Modeling (SEM) was conducted using AMOS. The fit of the model was assessed using multiple indices, including the Chi-square statistic, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker–Lewis Index (TLI).

Findings and Results

The sample included 386 students, of whom 216 (55.9%) were female and 170 (44.0%) were male. Regarding age distribution, 142 students (36.8%) were aged 15, 128 students (33.1%) were aged 16, and 116 students (30.1%) were aged 17 or older. In terms of academic major, 164 students (42.5%) were in the experimental sciences, 123 students (31.9%) in mathematics, and 99 students (25.6%) in humanities. These figures reflect a diverse and balanced sample from Tehran's upper secondary student population.

Table 1. Descriptive Statistics for Study Variables (N = 386)

Variable	Mean (M)	Standard Deviation (SD)
Academic Achievement	17.48	1.42
Mastery Goal Orientation	5.12	0.88
Performance Goal Orientation	4.37	1.01
Goal Regulation	4.76	0.74
Academic Beliefs	5.34	0.69

As shown in Table 1, students reported relatively high levels of academic achievement (M = 17.48, SD = 1.42) on a 0–20 GPA scale. The highest mean among psychological constructs was for academic beliefs (M = 5.34, SD = 0.69), indicating strong belief in their academic abilities and learning value. Mastery goal orientation had a higher mean (M = 5.12, SD = 0.88) than performance goal orientation (M = 4.37, SD = 1.01), suggesting that students generally emphasized learning over outperforming peers. Goal regulation also had a moderate-to-high average score (M = 4.76, SD = 0.74), indicating relatively good self-regulation capabilities among participants.

Prior to conducting parametric analyses, the underlying statistical assumptions were evaluated. The assumption of normality was confirmed through skewness and kurtosis values, which ranged from −0.87 to 0.64 for skewness and from −1.12 to 0.91 for kurtosis across the main study variables, falling within the acceptable range of ±2. The linearity assumption was verified through scatterplots, which showed linear relationships between variables. Additionally, the absence of multicollinearity was supported by Variance Inflation Factor (VIF) values ranging from 1.13 to 1.67, and tolerance values above 0.60. Homoscedasticity was also examined and confirmed through residual plots. These tests indicated that the data met the assumptions necessary for correlation and SEM analyses.

Table 2. Pearson Correlation Coefficients and p-values Between Variables

Variable	1	2	3	4	5
1. Academic Achievement	—				
2. Mastery Goal Orientation	.48** (.001)	—			
3. Performance Goal Orientation	−.19* (.042)	.11 (.063)	—		
4. Goal Regulation	.41** (.001)	.52** (.001)	−.07 (.172)	—	
5. Academic Beliefs	.46** (.001)	.55** (.001)	−.10 (.083)	.49** (.001)	—

Table 2 illustrates the Pearson correlations among the variables. Academic achievement showed strong positive correlations with mastery goal orientation ($r = .48$, $p < .01$), goal regulation ($r = .41$, $p < .01$), and academic beliefs ($r = .46$, $p < .01$), while negatively correlating with performance goal orientation ($r = -.19$, $p < .05$). The strongest relationship was between academic beliefs and mastery goal orientation ($r = .55$, $p < .01$). Performance goal orientation showed weak or non-significant correlations with the other variables.

Table 3. Goodness-of-Fit Indices for the Structural Equation Model

Fit Index	Value	Recommended Threshold
Chi-Square (χ^2)	128.45	—
Degrees of Freedom (df)	64	—
χ^2/df	2.01	< 3
GFI	0.94	≥ 0.90
AGFI	0.91	≥ 0.90
CFI	0.96	≥ 0.90
RMSEA	0.051	≤ 0.08
TLI	0.95	≥ 0.90

As presented in Table 3, the model demonstrated a good overall fit. The χ^2/df ratio was 2.01, below the recommended cutoff of 3. All incremental fit indices, including CFI (.96), TLI (.95), and GFI (.94), exceeded the acceptable threshold of 0.90. The RMSEA was 0.051, indicating a close fit of the model to the data. These results confirm that the structural model adequately represents the relationships among the variables.

Table 4. Standardized and Unstandardized Path Coefficients in the Structural Equation Model

Path	b	S.E.	β	p
Mastery Goal → Academic Beliefs	0.42	0.07	0.51	.001
Mastery Goal → Goal Regulation	0.39	0.06	0.48	.001
Performance Goal → Academic Beliefs	−0.13	0.06	−0.15	.036
Goal Regulation → Academic Achievement	0.28	0.05	0.35	.001
Academic Beliefs → Academic Achievement	0.31	0.06	0.38	.001
Mastery Goal → Academic Achievement (direct)	0.19	0.07	0.23	.004
Performance Goal → Academic Achievement (direct)	−0.09	0.04	−0.14	.021
Mastery Goal → Academic Achievement (indirect)	0.31	—	—	—
Performance Goal → Academic Achievement (indirect)	−0.07	—	—	—
Mastery Goal → Academic Achievement (total)	0.50	—	—	—
Performance Goal → Academic Achievement (total)	−0.16	—	—	—

Table 4 presents both direct and indirect pathways in the structural model. Mastery goal orientation significantly and positively influenced both goal regulation ($b = 0.39$, $\beta = 0.48$, $p < .001$) and academic beliefs ($b = 0.42$, $\beta = 0.51$, $p < .001$), which in turn predicted academic achievement ($\beta = 0.35$ and 0.38, respectively, both $p < .001$). The direct path from mastery goal to academic achievement was also significant ($\beta = 0.23$, $p = .004$), but most of its influence was mediated through the two mediators, resulting in a total effect of 0.50. Performance goal orientation had a small but significant negative direct effect on achievement ($\beta = -0.14$, $p = .021$) and a negative indirect effect via beliefs, yielding a total effect of −0.16. These findings support the mediating roles of goal regulation and academic beliefs in explaining how students' goal orientations shape academic outcomes.

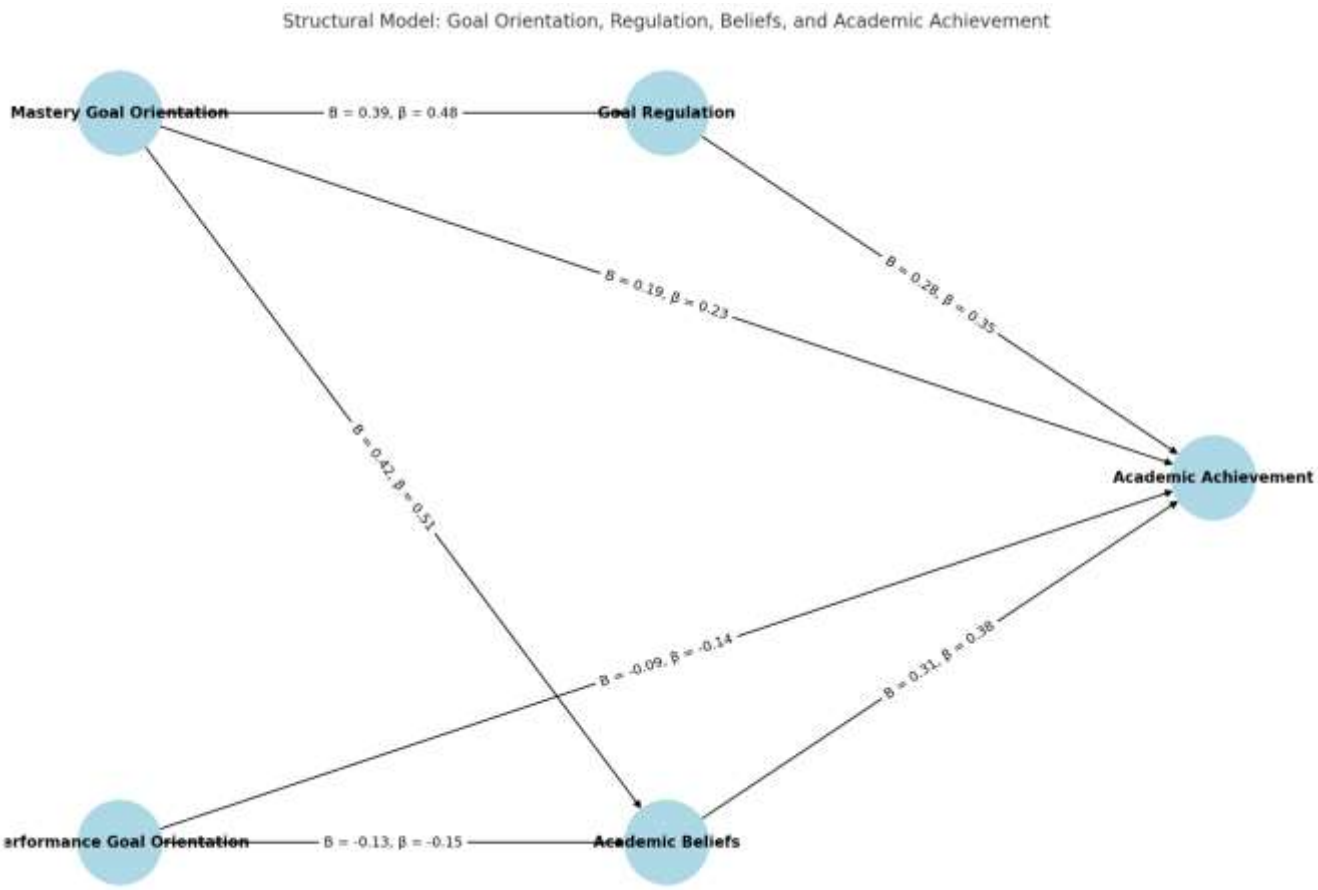

Figure 1. Final Model of the Study

Discussion and Conclusion

The purpose of this study was to investigate the relationship between goal orientation and academic achievement among upper secondary students in Tehran, considering the mediating roles of goal regulation and academic beliefs. The findings revealed that goal orientation significantly predicted academic achievement, both directly and indirectly through goal regulation and academic beliefs. Specifically, mastery-approach goals were positively associated with academic achievement, whereas performance-avoidance goals showed a negative relationship. Furthermore, students with higher levels of goal regulation and adaptive academic beliefs exhibited better academic outcomes. These results support the theoretical assumption that cognitive-motivational variables serve as mediators in the relationship between students' goal orientations and their academic performance.

The direct positive association between mastery goal orientation and academic achievement aligns with the foundational claims of achievement goal theory, which posits that students who pursue learning for the sake of competence and mastery are more likely to adopt adaptive learning behaviors, persist through challenges, and ultimately achieve better outcomes (3, 5). These results also support previous studies conducted in both Western and non-Western contexts showing that mastery-oriented students engage more

deeply in learning tasks, utilize effective study strategies, and maintain intrinsic motivation even in the face of academic stressors (4, 10). Our findings corroborate earlier research conducted in Iran by Farmad et al. (2020), which found a positive correlation between mastery orientation and achievement among medical science students (12).

Moreover, the negative association found between performance-avoidance goals and academic achievement confirms earlier findings that these goals are maladaptive, often resulting in test anxiety, self-doubt, and withdrawal from challenging academic tasks (1, 9). Students pursuing performance-avoidance goals often view ability as fixed and interpret mistakes as indicators of low competence, which discourages effort and persistence (8). This is particularly problematic in competitive academic settings such as Iran, where external evaluations dominate the educational climate and intensify fear of failure.

The study's mediation analysis further revealed that goal regulation serves as a significant pathway through which goal orientation affects academic achievement. Students who reported higher self-regulatory capacities, including the ability to manage, adapt, and pursue goals efficiently, were more likely to achieve academically. These findings are in line with the theoretical model proposed by Keyserlingk et al. (2022), which emphasizes the role of self-regulatory strategies in transforming motivational orientations into tangible academic outcomes (6). Similarly, Gao (2024) noted that in remote learning environments, goal regulation becomes a crucial predictor of performance, compensating for the lack of external instructional control (7). In our study, students who were able to apply strategic goal management demonstrated higher academic performance regardless of their initial orientation, suggesting that goal regulation may act as a buffering mechanism against less adaptive motivational patterns.

In addition to goal regulation, academic beliefs emerged as another vital mediating variable. Our findings indicate that students who held more adaptive academic beliefs—such as high academic self-efficacy, growth mindsets, and positive epistemic beliefs—tended to perform better academically. This is consistent with prior research showing that academic beliefs shape how students perceive their capabilities, approach academic tasks, and deal with challenges (15, 21). Elhassan et al. (2021) emphasized the role of implicit intelligence beliefs in promoting goal orientation and academic success, especially when students believe their intelligence can be developed through effort (9). In the Iranian context, where beliefs about fixed ability may be prevalent, fostering malleable views of intelligence can enhance students' motivation and reduce learned helplessness (13).

The joint mediating role of goal regulation and academic beliefs highlights the importance of integrative models that consider both motivational and cognitive pathways in understanding academic achievement. This is supported by the dual-mode theoretical framework proposed by Chen (2023), which links achievement goals with motivational effort and belief systems (8). Similarly, Dattathreya (2022) argued that self-efficacy beliefs are central to translating motivation into academic performance, particularly when students receive personalized coaching to develop goal-directed behaviors (18). Our findings reinforce the idea that neither goal orientation nor belief systems operate in isolation but interact synergistically to shape academic trajectories.

Additionally, the present study confirms previous work indicating that contextual and social factors play an important role in the development of students' academic motivation and beliefs. For example, Hidayatullah et al. (2024) demonstrated that students' beliefs about teachers' roles and their own

mathematical self-efficacy were influenced by the sources of their beliefs, such as family and peer support (19). In line with this, our findings suggest that educational environments fostering emotional and instructional support contribute positively to students' motivational orientations and academic beliefs, especially when they value learning over performance comparison.

The results also draw attention to the evolving academic landscape shaped by post-pandemic schooling. Students increasingly depend on internal resources—such as belief in their capabilities and the ability to regulate their learning—in online and hybrid learning contexts. This has been supported by recent studies showing how epistemic beliefs and self-regulation predicted academic performance in digital classrooms (14, 17). In our study, students with adaptive academic beliefs were able to sustain achievement despite environmental disruptions, affirming the importance of investing in belief-focused and strategy-based educational interventions.

Another relevant contribution of the study is its alignment with the work of Williams and Callahan (2025), who explored variables associated with graduate training and found that goal-directed behavior and belief systems are foundational to pursuing long-term academic goals (16). Similarly, Santos (2018) highlighted the interrelationship between motivational beliefs, values, and goals in fostering academic resilience in mathematics learning, a finding echoed in our sample of Iranian students (24).

Despite the valuable insights offered, this study is not without limitations. First, its cross-sectional design restricts causal inferences regarding the directionality of relationships between goal orientation, mediating variables, and academic achievement. Longitudinal studies are needed to determine the temporal stability and causality of these associations. Second, the study relied entirely on self-reported data, which are susceptible to biases such as social desirability and inaccurate self-assessment. Including teacher evaluations or objective performance measures could enhance the robustness of the findings. Third, the sample was confined to upper secondary students in Tehran, limiting the generalizability of the results to students in other regions or educational levels.

Future studies should consider implementing a longitudinal design to examine changes in goal orientation, self-regulation, and academic beliefs over time and their evolving impact on academic outcomes. Additionally, researchers could explore how cultural, socioeconomic, and institutional factors moderate these relationships. Comparative studies between high- and low-performing students may also uncover unique patterns of goal pursuit and belief structures. Moreover, future research should examine the role of teacher practices and classroom climate in shaping motivational profiles and cognitive strategies, particularly through mixed-method approaches that combine qualitative and quantitative insights.

Educational practitioners and school counselors should develop targeted interventions that cultivate mastery-oriented goals, enhance goal regulation skills, and promote adaptive academic beliefs among students. Workshops on self-regulated learning strategies, cognitive restructuring techniques, and growth mindset training can be embedded in the curriculum to foster long-term academic resilience. Teachers should also strive to create classroom environments that reward effort, allow for safe failure, and discourage maladaptive performance comparisons. Lastly, parental involvement programs can be designed to reinforce adaptive goal orientations and beliefs about learning at home.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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