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Predicting the Achievement Motivation of College Students based on the level of Self-awareness with the mediating role of Solution-Building Mindset

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Abstract

Aim: The aim of the present research is to predict college students' achievement motivation based on their level of self-awareness, with the mediating role of solution-building mindset.

Method: The research method was descriptive-correlational. The statistical population of the study included all students of Mohaghegh Ardabili University in 2025, from which 231 individuals were selected as the sample size using cluster sampling. The tools used in this research included the Achievement Motivation Questionnaire (Hermans, 1970), the Self-Awareness Questionnaire (Cooper, 1997), and the Solution-Building Inventory (SBI) (Jordan et al., 2010). The data analyzed by SPSS 27 and AMOS 24 using Pearson correlation and path analysis.

Findings: The AMOS results of path analysis indicated a direct and significant relationship between self-awareness and student's achievement motivation (β=0.17, P=0.001). Furthermore, a solution-building mindset had a direct relationship with self-awareness (β=0.57, P=0.001) and achievement motivation (β=0.39, P=0.001). The results also indicated mediating role of a solution-building mindset in relationship between self-awareness and achievement motivation (β=0.17, P=0.001). Finally, findings demonstrated that a solution-building mindset plays a mediating role in the relationship between self-awareness and achievement motivation.

Conclusion: Based on the results of the research, it should be stated that with and without the mediating role of solution-building mindset, college student's motivation for achievement can be predicted by self-awareness. It seems that solution-building mindset is recognized as an influential variable on achievement motivation and self-awareness in college students. Therefore, there is a necessity to examine the relationship between other important psychological variables in different communities and solution-building mindset.

Keywords: Achievement Motivation, Self-awareness, Solution-Building Mindset, College Students.

Introduction

Motivation is a vital factor for achieving academic success among college students, as it compels them to immerse themselves in their studies and persist through challenges (Vu et al., 2022). Various factors, including intrinsic interest in the subject matter and support from teachers and peers, shape students' motivational drive (Urhahne & Wijnia, 2023). In particular, intrinsic motivation, which stems from genuine interest and enjoyment in the learning process, is strongly associated with academic progress (Steinmayr et al., 2019).

A key aspect of motivation relevant to academic success is the drive to achieve high standards and overcome challenges, often referred to as achievement motivation (Brunstein & Heckhausen, 2018). This psychological force is shaped by both internal factors, such as personal interest and enjoyment, and external influences, such as rewards and individual perceptions (Vu et al., 2022). By directing students toward setting and pursuing academic goals, this drive fosters increased effort, perseverance, and active participation in classroom activities (Liu et al., 2024). Furthermore, cultivating such motivation not only enhances academic outcomes but also contributes to students' overall well-being and long-term success (Steinmayr et al., 2019). Educators, therefore, play a critical role in fostering this drive, equipping students with the skills and passion necessary for lifelong learning and professional advancement (Brunstein & Heckhausen, 2018).

The relationship between motivation for academic achievement and self-awareness among college students is complex and interdependent. Research indicates that self-awareness significantly enhances intrinsic motivation, which in turn leads to improved academic performance. Students who possess a high level of self-awareness are better able to identify their strengths and weaknesses, set achievable goals, and monitor their progress, which fosters a greater sense of ownership over their learning (Schunk & Zimmerman, 2012). Furthermore, self-aware students are more likely to seek feedback and engage in self-regulated learning strategies, resulting in higher levels of academic achievement (Zimmerman, 2002). This reciprocal relationship highlights the importance of cultivating self-awareness as a means to boost motivation and success in educational environments. Self-awareness, defined as the ability to recognize and understand one's thoughts, internal states, inclinations, interests, limitations, and the impact of actions on others, plays a critical role in personal development (Karden et al., 2022). This construct is increasingly viewed as multidimensional, encompassing diverse and complex cognitive processes that shape individuals' self-perception (Mograbi et al., 2024). By enabling college students to identify their strengths and weaknesses, this cognitive capacity empowers them to leverage their resources effectively, set meaningful academic goals, and pursue their aspirations with greater clarity (Saks, 2024). Recognizing abilities and limitations allows college students to adjust their study strategies to meet their individual needs and improve their academic performance (Merlin & Soubramanian, 2024). Furthermore, college students with high self-awareness know when to seek help and how to make the most of their supportive resources (Meng & Zhang, 2024). Additionally, college students with high self-awareness are better at controlling their emotions and managing interpersonal conflicts, which leads to improved interpersonal relationships

(Sibarani, 2024). Previous research indicates that there is a direct relationship between motivation for academic achievement and college students' self-awareness, and it is possible to predict their motivation for achievement based on their level of self-awareness (Azimi & Farzi, 2021).

While self-awareness provides students with a deeper understanding of their goals and challenges, and achievement motivation drives their pursuit of success, the process through which these factors interact to enhance academic outcomes remains complex. Research suggests that cognitive and behavioral strategies, such as proactive solution-building, play a critical role in translating self-awareness into sustained motivation (Wiyono et al. 2023). In this context, many factors can mediate the relationship between achievement motivation and self-awareness, one of which is the Solution-Building Mindset (SBM). Visser (2012) states that the Solution-Building Mindset consists of three categories of assumptions: 1) the belief that each person is the expert of their own life and has sufficient resources to achieve their goals (Arslan and Asıcı, 2022), 2) another fundamental belief is that an individual does not need a fundamental and large change; rather, small changes lead to significant transformations (Köktuna, 2007). These small changes include positive behaviors that can create minor differences for the individual in the moment (Koca, 2020), 3) the faith that everyone reaches their desired goals in their own way, and if our collaboration with that individual does not go well, it does not mean the person is resistant; rather, it means we have not yet found the right way to collaborate with them (Solms et al. 2022). The Solution-Building Mindset directly contrasts with the Problem-Solving Mindset, as a person with a Problem-Solving Mindset tends to focus more on the problems and the details of those problems, while a person with a Solution-Building Mindset is not interested in understanding the causes of their problems but is keen to identify achievable goals based on their strengths, visualize the goal in their mind, determine the path to reach those goals, and take small steps towards achieving them. For this reason, individuals with a Solution-Building Mindset possess good self-awareness (Grant et al., 2012). On the other hand, because the goals are based on healthy, logical, and practical evaluations, taking into account limitations and capabilities, the individual will have a strong motivation to achieve them (Karahan & Hamarta, 2020).

The future of every country and society lies in the hands of its college students and the youth of the nation. For this reason, investing in this demographic is particularly important. According to the mentioned studies, motivation for achievement affects college students' academic and career performance; therefore, it seems essential to examine the predictive factors of achievement motivation in college students. Based on a review of the literature and research gaps, it can be said that investigating the role of self-awareness in predicting college students' achievement motivation, with the mediating role of Solution-Building Mindset, is necessary. Thus, the present study was designed and conducted to examine the role of self-awareness in predicting the level of achievement motivation, with the mediating role of Solution-Building Mindset in college students (Fig 1).

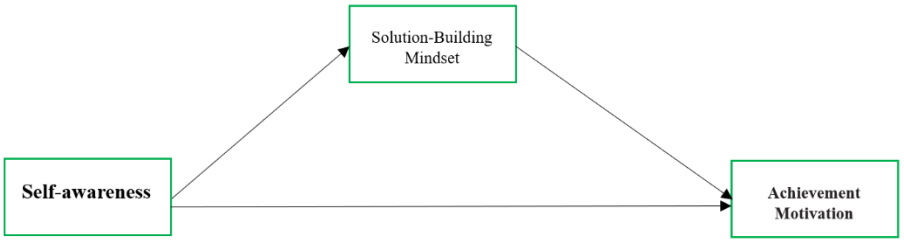

Fig 1. Conceptual framework of the research

Methods

This research employed a descriptive-correlational design with structural equation modeling. The statistical population comprised all students enrolled at University of Mohaghegh Ardabili in Ardabil, Iran, during the 2025 academic year. A sample of 231 students was selected using a cluster sampling method. Specifically, four faculties (Educational Sciences and Psychology, Literature and Humanities, Agriculture, and Engineering) were randomly chosen. Within each selected faculty, one department was randomly selected, and all students within those departments who met the inclusion criteria were invited to participate. Of the participants, 198 were pursuing a bachelor's degree, 28 were master's students, and 5 were doctoral candidates. The sample size was determined based on Kline's (2023) recommendation of a minimum of 200 participants for path analysis, combined with the guideline of 5 to 10 participants per estimated parameter, ensuring sufficient statistical power for the analysis. Data collection occurred between January and February 2025, during the semester. After obtaining ethical approval from the University of Mohaghegh Ardabili Research Ethics Committee and necessary permissions from the university administration, the study was implemented by a team of trained researchers from the Department of Psychology. The researchers distributed paper-based questionnaires in classroom settings during regular class hours, ensuring minimal disruption to academic schedules. Participants were briefed about the study's purpose, voluntary nature, and confidentiality of responses prior to participation. Each participant completed three questionnaires: the Achievement Motivation Questionnaire (Hermans, 1970), the Self-Awareness Questionnaire (Cooper, 1997), and the Solution-Building Inventory (Jordan et al., 2010). The questionnaires were administered in Persian, and completion took approximately 20–30 minutes per participant. To ensure data quality, the researchers were present to address any questions and verify that questionnaires were fully completed. Inclusion criteria for participation included: (1) enrollment as a full-time student at University of Mohaghegh Ardabili in a bachelor's, master's, or doctoral program; (2) voluntary consent to participate; (3) age between 18 and 35 years, consistent with the typical student demographic; and (4) proficiency in reading and writing Persian to complete the questionnaires independently. Exclusion

criteria included: (1) incomplete questionnaires (defined as missing more than 10% of responses); (2) invalid or inconsistent responses (e.g., selecting the same response for all items); (3) voluntary withdrawal from the study; and (4) self-reported medical or psychological conditions that could impair questionnaire completion. Data were analyzed using SPSS 27 for descriptive statistics and correlation analyses, and AMOS 24 for path analysis to test the proposed model. All procedures adhered to ethical guidelines, ensuring participant confidentiality and informed consent. The following tools were used for data collection.

Achievement Motivation Test (AMT): The Hermanns Achievement Motivation Test (AMT), developed by Hermanns in 1970, is a 29-item instrument designed to assess individual achievement motivation. The test employs incomplete sentences which respondents are required to complete. A four-point Likert scale is utilized for responses, with options assigned scores ranging from 1 to 4. Scoring is predicated on nine core questions embedded within the questionnaire. Items are presented in both positively and negatively worded formats. Specifically, for items 4, 9, 10, 14, 15, 16, 20, 23, 27, 28, and 29, response option A is scored as 1, B as 2, C as 3, and D as 4. Conversely, for items 2, 3, 5, 6, 7, 8, 11, 12, 13, 17, 18, 19, 21, 22, 24, 25, and 26, response option A is scored as 4, B as 3, C as 2, and D as 1. The AMT yields potential scores ranging from 29 to 116, with elevated scores indicative of higher achievement motivation and diminished scores reflective of lower achievement motivation. Criterion validity, assessed via correlation with the Ghiselli Self-Description Inventory, was reported as 0.84 (Soleimani far & Shabbani, 2013), suggesting acceptable validity. Abolghasemi Najafabadi et al. (2014) reported a Cronbach's alpha coefficient of 0.81 for the instrument's reliability. In the current study, the Cronbach's alpha coefficient for the AMT was determined to be 0.76.

Self-Awareness inventory (SAI): Self-Awareness Inventory (SAI): The Self-Awareness Inventory (SAI), developed by Cooper (1997), assesses an individual's level of self-awareness. It comprises 25 items rated on a five-point Likert scale, designed to capture the extent of self-awareness. Scoring is based on responses across two distinct sections. Items 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 21, 24, and 25 are scored such that Very good = 3, Relatively good = 2, Slightly = 1, and Not at all = 0. Conversely, items 7, 13, 14, 20, 22, and 23 are reverse-scored, with Very good = 0, Relatively good = 1, Slightly = 2, and Not at all = 3. The SAI yields a potential score range of 25 to 125. Higher scores are indicative of greater self-awareness, while lower scores suggest a reduced level of self-awareness. Cooper (1997) reported a criterion validity coefficient of 0.74, determined via Pearson's correlation coefficient and comparison with a parallel questionnaire. The inventory's reliability, as measured by Cronbach's alpha, was reported as 0.84 (Bakhtiari, 2010). In the current study, the estimated reliability coefficient, using Cronbach's alpha, was found to be 0.74.

Solution-Building Inventory (SBI): The Solution-Building Inventory (SBI), developed by Jordan et al. (2010), measures an individual's inclination toward solution-focused thinking and differentiates it from a problem-oriented mindset. The SBI consists of 12

items utilizing a 5-point Likert scale, ranging from Strongly disagree = 1 to Strongly agree = 5. Higher scores reflect a stronger solution-focused orientation, while lower scores suggest a greater tendency toward problem-oriented thinking. Jordan et al. (2010) reported a Cronbach's alpha of 0.83 for the SBI. Subsequently, Molaei et al. (2024) confirmed the validity and reliability of the Persian adaptation of the SBI, also reporting a Cronbach's alpha of 0.83. In the present study, the Cronbach's alpha for the SBI was determined to be 0.88.

Results

The demographic data for this study is as follows. Of the total 231 participants, 183 (79.2%) were female and 48 (20.8%) were male. The mean age and standard deviation of the participants were 23.58 years and 2.93, respectively.

Table 2. shows the correlation coefficients of the variables of this research.

Table 2. correlation coefficients between variables

variables	**1**	**2**	**3**
1.Achievement Motivation	1		
2. Self-Awareness	**0.39	1	
3. Solution-Building Mindset	**0.48	**0.56	1

**P < 0.01

Table 2 shows that there is a positive correlation between the scores of solution-building mindset, self-awareness and achievement motivation.

Table 3. Fit indices of the proposed model

Model	**X^2/df**	**CFI**	**RMSEA**	**IFI**	**GFI**	**AGFI**
	2.43	0.97	0.073	0.97	0.98	0.89

In the present study, the values of CFI, IFI, RMSEA, and GFI obtained, as stated in Table 3, indicate that the fit of the proposed model is desirable.
Figure 1 shows the calculated coefficients of the paths related to the relationship between achievement motivation, self-awareness, and Solution-Building Mindset.

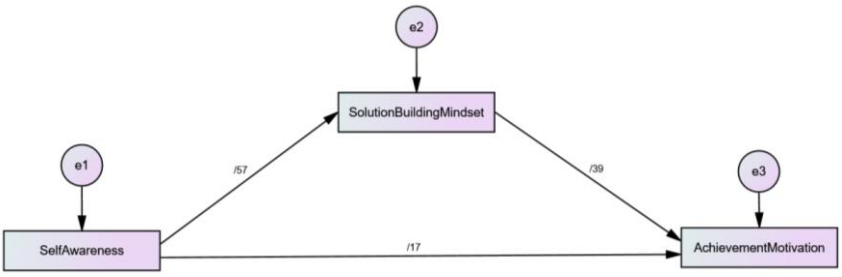

Fig 2. Standard coefficients of the proposed model between achievement motivation, self-awareness, and solution-building mindset

Figure 2 illustrates the significant positive relationship between self-awareness and achievement motivation, as well as the significant positive relationship between solution-building mindset with self-awareness and achievement motivation.
Table 4 shows the measurement parameters related to the direct relationship between self-awareness and achievement motivation, and solution-building mindset, and vice versa. According to the data presented in the table below, it can be stated that the direct paths of self-awareness on solution-building mindset (β=0.57, P=0.001), self-awareness on achievement motivation (β=0.17, P=0.001), and solution-building mindset on achievement motivation (β=0.39, P=0.001) are significant, indicating a positive and significant relationship among the mentioned variables. Additionally, the indirect path between self-awareness and achievement motivation (β=0.22, P=0.001) is also positive and significant.

Table 4. Direct and indirect effect of independent variables on dependent

independent variable	**dependent variable**	**Direct effect**	**Indirect effect**	**total effect**	**P**
Self-Awareness	Solution-Building Mindset	0.57	---	0.57	0.001
Self-Awareness	Achievement Motivation	0.17	0.22	0.39	0.001
Solution-Building Mindset	Achievement Motivation	0.39	---	0.39	0.001

Table 5. The indirect effect of cognitive flexibility on interpersonal relationships

Variables	**Indirect effects**						
independent	**mediating**	**dependent**	**B**	**Eror**	**Min**	**Mix**	**P**
Self-Awareness	Solution-Building Mindset	Achievement Motivation	0.29	0.07	0.16	0.44	0.001

The bootstrap method was used to investigate the indirect effect of self-awareness on the achievement motivation through the solution-building mindset, and the resulting data are shown in Table 5.
With a bootstrap resampling size of 5000, the 95% confidence intervals reported in Table 5 for the indirect effect of solution-building mindset on the relationship between Self-Awareness and achievement motivation (β=0.29, P=0.001) do not contain zero. This suggests a statistically significant mediation effect of solution-focused mindset at $p < 0.001$.

Discussion

The present study investigated the mediating role of a solution-building mindset in the relationship between self-awareness and achievement motivation among university students. The findings confirmed a significant positive relationship between self-

awareness and achievement motivation, with the solution-building mindset partially mediating this relationship. These results align with and extend prior research, offering novel insights into the psychological mechanisms underlying student motivation and providing practical implications for preventive counseling interventions.

The significant positive relationship between self-awareness and achievement motivation is consistent with several recent studies. For instance, Merlin and Soubramanian (2024) found that self-awareness enhances intrapersonal skills, which in turn foster academic motivation by enabling students to set realistic goals and monitor their progress. Similarly, Mograbi et al. (2024) emphasized that self-awareness, as a multidimensional cognitive process, supports students in leveraging their strengths, aligning with our finding that self-aware students exhibit higher achievement motivation. Additionally, Liu et al. (2025) reported that self-awareness correlates with emotional engagement and psychological capital, both of which contribute to sustained academic motivation, further supporting our results. However, some inconsistencies exist in the literature. For example, Meng and Zhang (2024) argued that academic self-efficacy, rather than self-awareness, is the primary driver of achievement motivation, suggesting that self-awareness plays a secondary role. This contrasts with our findings, which position self-awareness as a direct predictor of achievement motivation, both independently and through the mediating role of a solution-building mindset. Additionally, Saks (2024) found that self-efficacy and self-set grade goals fully mediate the relationship between self-awareness and academic outcomes, whereas our study indicates only partial mediation by the solution-building mindset (β=0.29, P=0.001). These discrepancies may stem from differences in study populations or the specific constructs measured, as Saks (2024) focused on self-efficacy rather than a solution-building mindset.

Both Merlin and Soubramanian (2024) and Mograbi et al. (2024) agree with our study that self-awareness enhances students' ability to recognize their strengths and weaknesses, fostering intrinsic motivation and goal-directed behavior. This aligns with Self-Determination Theory (SDT; Ryan & Deci, 2000), which posits that autonomy and competence, supported by self-awareness, drive intrinsic motivation.

Liu et al. (2025) and our study converge on the idea that cognitive and behavioral strategies, such as those embodied in a solution-building mindset, enhance achievement motivation. Liu et al. (2025) highlight emotional engagement as a parallel mechanism, suggesting that proactive strategies amplify motivational outcomes.

Meng and Zhang (2024) emphasize academic self-efficacy over self-awareness, arguing that self-efficacy directly influences academic engagement and performance. In contrast, our study positions self-awareness as a foundational construct that influences motivation both directly and indirectly through a solution-building mindset. This disagreement highlights the need to clarify the relative contributions of self-awareness versus self-efficacy in future research.

Saks (2024) suggests that self-efficacy fully mediates the relationship between self-awareness and academic outcomes, whereas our findings indicate partial mediation by the solution-building mindset. This difference may reflect the unique proactive and future-oriented nature of the solution-building mindset compared to self-efficacy, which focuses more on perceived competence.

The mediation effect of the solution-building mindset can be understood through SDT, which posits that intrinsic motivation thrives when individuals feel competent and autonomous. Self-awareness enhances students' understanding of their intrinsic goals, while a solution-building mindset empowers them to take autonomous actions toward achieving these goals (Visser, 2012). For example, a student aware of their procrastination tendencies may adopt time management strategies, sustaining their motivation to excel academically. This proactive mindset distinguishes our findings from studies focusing on general problem-solving skills, as it emphasizes constructing solutions over analyzing problems (Grant et al., 2012).

Theoretically, this study extends SDT by integrating the solution-building mindset as a mechanism linking self-awareness to motivation. It also contributes to positive psychology by highlighting proactive cognitive strategies in academic settings. Practically, the findings suggest that counselors can design interventions combining reflective practices (e.g., journaling, mindfulness) to boost self-awareness with workshops on solution-building and goal-setting skills. Such interventions could prevent academic disengagement and promote resilience.

This study's findings align with recent research emphasizing the role of self-awareness in fostering achievement motivation while extending the literature by identifying the solution-building mindset as a key mediator. Discrepancies with studies prioritizing self-efficacy highlight the need for further research to disentangle the roles of these constructs. By elucidating these dynamics, this study offers valuable insights for both theoretical frameworks and preventive counseling practices aimed at enhancing student motivation.

Conclusion

In summary, this study provides robust evidence that a solution-building mindset mediates the relationship between self-awareness and achievement motivation among university students. By elucidating this mechanism, the findings contribute to both theoretical understanding and practical applications in preventive counseling. Future research should address the identified limitations and explore additional mediators to further refine our understanding of these dynamics.

Limitations and Future Directions

Despite its contributions, this study has several limitations. First, the sample was limited to university students from a single institution, which may limit the generalizability of the findings. Future research should replicate the study across diverse academic and cultural contexts. Second, the study relied on self-report measures, which may introduce response biases. Incorporating objective measures, such as behavioral assessments of solution-building behaviors, could strengthen the findings. Finally, longitudinal studies are needed to establish causality and explore how the relationships among self-awareness, solution-building mindset, and achievement motivation evolve over time.

Disclosure Statements

We are grateful to all the participants who accompanied us in this study and there is no conflict of interest.

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