

Self-Leadership and Self-Actualization among Graduate Students: The Mediating Role of Metacognitive Skills in Jordanian Higher Education

Mai Ahmed Muheidat¹, Mohammed Khzaiyem Al-Shammari², Mohammed Mahmoud Al-Anagreh³

¹Department of Counseling and Mental Health, Faculty of Educational Sciences, The World Islamic Sciences and Education University, Amman, Jordan

Email: may.mohadat@wise.edu.jo

²Curricula and Teaching Methods Department, College of Education, University of Hafr Al-Batin, Hafr Al-Batin, Saudi Arabia

Email: drmalshammari@uhb.edu.sa

³History Department, Faculty of Arts, Yarmouk University, Irbid, Jordan

Email: Dr.anagreh@yu.edu.jo

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ABSTRACT:

This study investigates the relationships between self-leadership, metacognitive skills, and self-actualization among graduate students in Jordanian universities, with a particular focus on the mediating role of metacognition. A cross-sectional, correlational design was employed using structural equation modeling (SEM) to test the proposed model. Data were collected from a stratified random sample of 360 graduate students enrolled in social science disciplines. The results revealed that self-leadership significantly predicts both metacognitive skills ($\beta = 0.62$, $p < .001$) and self-actualization ($\beta = 0.34$, $p < .001$), while metacognitive skills also exert a significant positive effect on self-actualization ($\beta = 0.46$, $p < .001$). Mediation analysis using bootstrapping indicated that metacognitive skills partially mediate the relationship between self-leadership and self-actualization (indirect effect $\beta = 0.29$, 95% CI [0.21, 0.38]). The structural model demonstrated good fit and substantial explanatory power. These findings contribute to the literature by integrating self-leadership and metacognition within a unified framework of self-regulated learning and personal development. The study highlights the importance of metacognitive processes as a mechanism through which self-regulatory strategies translate into higher-order outcomes such as self-actualization. Practical implications suggest that higher education institutions should incorporate structured metacognitive training alongside self-leadership development to enhance graduate students' academic and personal growth. Future research should employ

terms and conditions of the Creative CommonsAttribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).	longitudinal and experimental designs to further validate the proposed relationships across diverse cultural contexts. Keywords: Self-leadership; metacognitive skills; self-actualization; graduate students; higher education
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1. Introduction

Graduate students today are being called upon by institutions to act independently in an educational environment; be able to take on a multitude of academic responsibilities, engage in their own research and continue to grow personally and intellectually throughout their studies. Although there is high expectation from higher education regarding graduate students acting as independent learners, managing their time effectively to complete tasks and projects, identifying and setting goals and motivating themselves through long periods of studying; many graduate students experience significant barriers when it comes to developing their self-regulated skills, achieving their academic goals, and maintaining motivation. The gap between what institutions expect of them and the capacity they have to develop the necessary self-directed skills has become one of the most pressing issues in higher education. Therefore, the focus of much of the current literature in higher education is on examining the various psychological and cognitive processes which enable individuals to direct their own learning successfully and promote their personal growth (Shek et al., 2023; Li & Chalermvongsavej, 2025).

The concepts of self-leadership, metacognitive skills, and self-actualization are all relevant within this context. Self-leadership is defined as an internal influence process that enables individuals to control their behavior, cognition, and motivation with respect to the achievement of objectives (Neck & Houghton, 2006) as they implement strategies for achieving their goals such as goal setting and self-regulation and develop positive thoughts. In contrast, the definition of metacognitive skills relates to how individuals monitor their own cognitive processes. Specifically, it includes the individual's ability to plan, evaluate and reflect on his or her own learning processes (Hennecke &

Bürgler, 2023; Schraw, 1998). These skills allow learners to alter how they approach learning tasks when faced with changes in those tasks. Self-actualization is the highest form of individual growth and development, where individuals realize their full capabilities and pursue significant life goals (Kaufman, 2023; Maslow, 1943), which is a reflection of humanistic theory. As such, these are two aspects of personal growth that reflect an increase from self-regulated behaviors toward self-satisfaction and therefore may be especially relevant for students who attend graduate school.

While many researchers have studied how self-leadership, metacognitive skills and self-actualization relate to one another, their current study has gaps in it. Self-leadership has been found to be related to both better metacognition and better academic performance (Elhusseini et al., 2022; Kim, 2019; Zhang et al., 2019), while research on metacognitive skills suggests they will lead to improved learning results and mental health for students. The same is true for self-actualization and metacognitive skills, as the more metacognitively aware an individual is, the more likely they are to experience self-actualization and overall well-being (Kiaei, 2014; Guesmi et al., 2022). Unfortunately, these associations have generally been researched independently of each other without much consideration to what mediates the connection. There is notably little research examining whether or not metacognitive skills act as a mediator by which self-leadership influences self-actualization (Akcaoglu et al., 2023; Chen & Zhang, 2022). Furthermore, this deficiency can be observed more so in non-Western education settings than Western ones due to differences in culture and institutions that can influence how students think about and develop themselves cognitively and motivationally.

To fill this research void, this current research has utilized Zimmerman's (2000) Self-Regulation

Theory. Zimmerman argues that successful learning and performance is established by an ongoing cycle of planning, monitoring, and reflection of one's own performance. Zimmerman defines self-leader strategies as mechanisms to enhance an individual's ability to regulate their own learning through metacognition or metacognitive monitoring and regulation. These metacognitive regulatory processes lead to enhanced self-awareness, adaptability in the way one learns and therefore facilitates the realization of each person's full potential. Therefore, metacognitive abilities were identified within this study as a key mechanism linking self-leadership to self-actualization. The use of Zimmerman's model not only ties together both cognitive and motivational aspects of the learning process; however, it also explains personal development as a process in the context of the academic environment.

Building upon the above-described conceptual framework, the present study provides three key contributions to prior literature. The first contribution concerns the construction of an integrative, multidimensional model (self-leadership, metacognitive abilities and self-actualization) for personal growth based upon a single, unified theoretical base. The second contribution involves empirical testing of the proposed mediating relationship between metacognitive skills and thereby providing new insight into the processes involved in personal development at the level of graduate students. Finally, the third contribution concerns focus on graduate students from Jordanian Universities. Thus, the third contribution addresses one of the few gaps in the literature concerning the application of theoretical models developed primarily in Western Educational Contexts to other, non-Western educational contexts and expands the applicability of such theoretical frameworks.

The principal goal of this investigation therefore is to explore the direct and indirect associations between self-leadership and self-actualization, with metacognitive skills acting as the mediator in these associations. In order to investigate the direct and indirect associations identified above, the authors utilized a quantitative cross-sectional methodology,

employing validated measurement tools along with structural equation modeling.

2. Literature Review and Hypotheses Development

2.1 Theoretical Foundations

Metacognition is understood as a higher-level cognitive regulatory process, which involves being aware of, and controlling your own thinking processes (such as planning, evaluating, and monitoring) (Hennecke & Bürgler, 2023; Flavell, 1987; Schraw, 1998). The role these processes play in enabling learners to be flexible with their approach to tasks based upon task requirements enables learners to effectively implement self-regulated learning (Barrientos et al., 2025).

Self-leadership is defined as the ability to lead oneself in various contexts such as at home or work. It is characterized by the ability to motivate oneself and to set goals for oneself (Manz & Sims, 2001).

The purpose of this research was to determine whether there is a statistically significant positive correlation between the level of self-leadership and the level of self-actualization.

In addition to providing insight into the relationships between these variables, this research will also provide a foundation for developing programs designed to improve self-leadership and self-actualization among adults.

In addition to self-management, self-leadership – in terms of Manz (1986), and extended by Neck and Houghton (2006) — includes both a set of cognitive and behavioral approaches that allow people to directly affect their performance (Kim et al., 2024; Bjerke, 2024). Examples of these include goal-setting for oneself, observing oneself, positive ways of thinking about things, and using intrinsic motivation techniques. According to Social Cognitive Theory (Bandura, 1986), self-leadership would represent a form of self-agency or regulation for influencing your behavior and cognitive functions with self-directed reflection and through self-confidence (self-efficacy).

Self-actualization represents the highest state of psychological development as it represents achieving one's full potential, and pursuing

meaningful goals based on an individual's intrinsic motivations (Kaufman, 2023; Maslow, 1943). Self-Determination Theory (Deci & Ryan, 2000) also views this process as the fulfillment of three basic psychological needs: autonomy, competence and relatedness. As such, self-actualization is not just an end result of a process; rather it is a continuous process of personal growth in the direction of autonomy, and the process is influenced by internally directed motivations and is facilitated by effective self-regulation.

The integration of both self-leadership and metacognition allows us to reason that self-leadership may provide the specific behaviors and thought processes or strategies to develop self-regulation. Additionally, metacognition will be the process by which those specific behaviors and thoughts are monitored, corrected or changed over time so that an individual is able to achieve a state of self-actualization. The above integrated model is a foundation from which we can examine how each of the variables in this study relate to one another.

2.2. Empirical Evidence on Key Relationships

Self-Leadership and Self-Actualization

Empirical evidence supports a positive relationship between self-leadership and personal developmental outcomes such as self-actualization and general wellness. The use of self-leadership has been demonstrated to contribute to self-directed learning, motivation, and achievement of goals for individuals employing these strategies (Junça-Silva & Camaz, 2023; Neck et al., 2019; Vargas et al., 2025). Self-leadership helps to develop an awareness of self and intentionality in how we act, both of which are essential elements to growth and development. Studies recently completed within the context of post-secondary educational settings indicate that students with strong self-leadership capabilities are also characterized by increased academic engagement, psychological resiliency and overall satisfaction with their lives (Shek et al., 2023; Hall et al., 2023), each of which aligns closely with Maslow's definition of self-actualization. However, most of the work conducted on this topic thus far has been correlative and does not provide sufficient insight into the specific processes through which

self-leadership results in increased levels of personal fulfillment.

Self-Leadership and Metacognitive Skills

Studies of the association between self-leadership and metacognition share an underlying connection due to the common focus on self-regulatory behaviors for both. As a result, the use of self-leadership strategies like self-set goals, or monitoring one's own performance will generally include some form of meta-cognitive process, (e.g. setting up plans, evaluating performance).

Meta-cognitive research has identified positive associations with both self-leadership (Zhang et al., 2019; Kim, 2019; Chen & Zhang, 2022), and self-metacognitive awareness/ regulation. For example, students who utilize self-leadership to proactively manage their actions/behavior, are more likely to evaluate their cognitive development processes and make appropriate adjustments to improve deep cognitive processes (Akcaoglu et al., 2023). Although previous studies have shown evidence of this relationship, there has been little analysis of how self-leadership relates to other structural models that examine subsequent constructs (i.e. self-actualization) that may be related to the relationship itself.

Metacognitive Skills and Self-Actualization

The connection between metacognitive knowledge/awareness has been shown to be related to many beneficial academic and mental health-related issues for example, learning performance, self-efficacy, and general wellbeing. Additionally, by allowing an individual to assess and direct his or her cognitive processes, metacognition provides a way to promote adaptive learning and reflective thought (Maximino-Pinheiro et al., 2024; Teng & Yang, 2023).

For example, Kiaei (2014) showed that there was a positive correlation between university student metacognitive awareness and both self-actualization and overall wellbeing. Likewise, Przybyl (2025), recently researched that the use of metacognitive training allowed students to develop the skill necessary to create realistic objectives, think about

their experiences, and learn in a purposeful manner – all aspects of self-actualization. Nonetheless, metacognition's role as a mediator variable linking self-regulatory strategies and personal growth/development still needs additional study.

2.3. Mediation Mechanism: The Role of Metacognitive Skills

Prior research has identified direct correlations between the variables under study; however, no study has been conducted to explore the pathway by which self-leadership impacts self-actualization. Based on Self-Regulation Theory, this study posits that metacognitive skill serves as an intervening variable between self-leadership and self-actualization (Chen & Zhang, 2022; Liu et al., 2025; Mansouri & Graham, 2025).

Self-leadership enables individuals to develop the strategies needed to engage in self-regulation, including developing goals, monitoring one's own behavior, and utilizing positive thinking. The efficacy of these self-regulatory strategies is contingent upon whether the individual can reflectively assess their own cognitive processing and make adjustments as deemed necessary. Therefore, metacognitive skills serve as a transformative intermediary between the self-leadership strategies developed by the individual and the actual development of meaningful knowledge acquisition and/or personal growth (Teng & Yang, 2023; Hu et al., 2026).

As well, metacognitive knowledge increases an individual's ability to reflect upon oneself, which is a component of self-actualization. The reflective process that occurs through metacognitive knowledge allows individuals to develop greater understanding about themselves. Through this increased understanding, metacognitive knowledge encourages individuals to be aware of their own thought processes and how they relate to their goals, values, and life experiences; thus allowing them to identify what activities will allow them to achieve their own personal fulfillment.

The proposed mediation model provides great relevance in graduate studies due to the expectations placed on graduate level students to become independent learners. Although theoretically

plausible, there has been limited empirical testing of this mediation model, especially in non-western countries (i.e., Jordan) (Chen & Zhang, 2022; Akcaoğlu et al., 2023).

2.4. Cultural Context Considerations

The study described here was conducted within the framework of the Jordanian university system (which can be viewed as an example of many larger trends in the overall structure of Arab educational systems) that includes a blend of collectivist societal values with growing interest in developing individual autonomy. Both self-leadership and metacognitive skills are widely researched constructs in the West; however, these two constructs may be represented differently in collectivistic cultures where social expectations and group norms influence individuals' behaviors.

There is little prior research on the representation and effects of self-regulatory constructs among Arab populations. Therefore, there is a need to investigate these constructs in relation to each other in the context of the specific culture(s) of the countries located in the Middle East. This study will contribute to validating self-regulation theories across different cultures by investigating these construct in Jordanian universities.

2.5. Hypotheses Development

Based on the theoretical and empirical arguments outlined above, the following hypotheses are proposed:

Direct Relationships

H1: Self-leadership has a positive and statistically significant effect on self-actualization among graduate students.

Rationale: Self-leadership involves self-regulatory strategies that promote goal-directed behavior, self-awareness, and personal growth, all of which are central to self-actualization.

H2: Self-leadership has a positive and statistically significant effect on metacognitive skills among graduate students.

Rationale: Self-leadership strategies require individuals to engage in planning, monitoring, and evaluation processes, thereby enhancing metacognitive awareness and regulation.

H3: Metacognitive skills have a positive and statistically significant effect on self-actualization among graduate students.

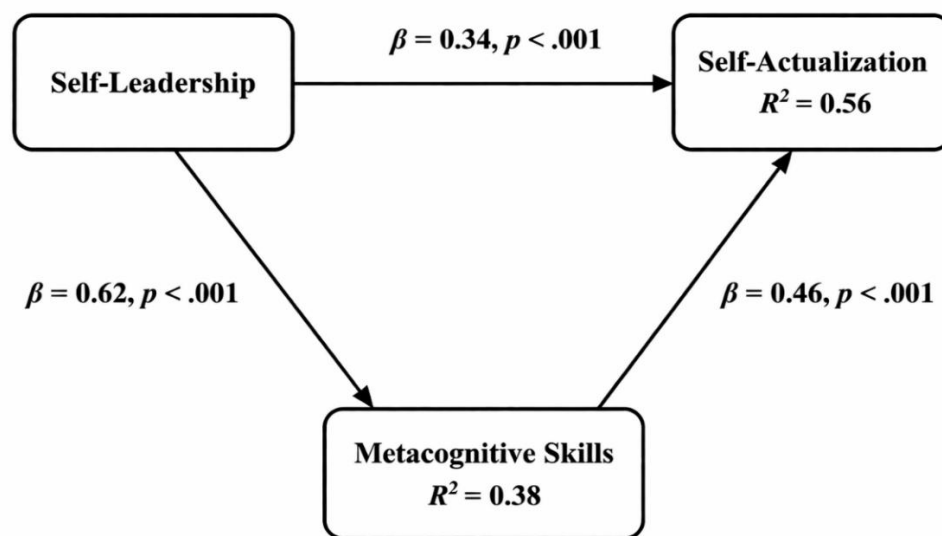
Rationale: Metacognitive skills facilitate reflective thinking, adaptive learning, and alignment between personal goals and actions, which are essential for achieving self-actualization.

Mediating Relationship

H4: Metacognitive skills mediate the relationship between self-leadership and self-actualization

among graduate students. *Rationale:* Self-leadership provides the strategic foundation for self-regulation, while metacognitive skills enable the monitoring and refinement of these strategies, ultimately facilitating personal growth and self-actualization.

Based on the theoretical and empirical foundations outlined above, the proposed conceptual model of the study is presented in Figure 1.



3. Methodology

Research Design

This study employed a cross-sectional, correlational design using structural equation modeling (SEM) to examine the relationships between self-leadership, metacognitive skills, and self-actualization, as well as the mediating role of metacognition among graduate students.

Population and Sampling

The total study population contained all graduate students enrolled in social sciences programs in all of the Jordanian universities during the 2025-2026 school year (N=4,317).

A stratified random sampling method was used to collect data from different strata that included both university affiliation and gender.

Using a computer-generated random selection process within each of the strata, participant samples were drawn.

In addition to the overall response rate being very high (90%) as evidenced by an electronically administered questionnaire with 360 respondents out of 400 (valid) completed surveys; the sample size was sufficient enough to conduct structural equation modeling and also had the necessary number of respondents needed to detect a medium effect size at $\alpha = .05$ and power = .8

Data Collection Procedures

Data were collected between January and March 2026 through an online questionnaire distributed via institutional email and academic platforms. Participation was voluntary, and informed consent was obtained electronically. Anonymity and confidentiality were ensured to reduce response bias.

Measurement Instruments

All of these constructs were measured through validated survey instruments.

The survey instruments were also translated into Arabic to assess the participants' self-reporting in their native language.

The translations used a double translation technique for accuracy, which included forward – backward translation methods with an additional test sample of 30 students.

Metacognitive skills were assessed using the metacognitive scale developed by Altındağ and Senemoglu (2013).

Self-actualization was assessed using the abbreviated version of the self-actualization scale developed by Jones and Crandall (1986).

Self-leadership was assessed using the Abbreviated Self-Leadership Questionnaire developed by Houghton et al. (2012) with all responses recorded via Likert type scales.

Validity and Reliability

Confirmatory Factor Analysis (CFA) was performed in order to determine Construct Validity. The Measurement Model showed a good fit to the data for each of the five fit indices used to evaluate this model (CFI= .94; TLI=.93; RMSEA= .045; SRMR= .041). All factor loadings were greater than 1.00 as suggested. Convergent validity is indicated when both Average Variance Extracted (AVE) is over .50 and Composite Reliability (CR) is also over .70. Discriminant validity was established through the use of HTMT criterion. Internal consistency was evaluated through both Cronbach's Alpha and McDonald's Omega. Each of these statistics provided an indication that the measures had high internal consistency.

Common Method Bias

Procedural remedies included ensuring anonymity and reducing evaluation apprehension. Harman's single-factor test indicated that common method bias was not a significant concern.

Data Analysis

In preliminary explorations of the data, we investigated missing values, outliers, violations to assumptions of normality, and issues related to multicollinearity. We used a two-stage Structural Equation Modeling (SEM) method; first through Confirmatory Factor Analysis (CFA) for the

measurement model, then for structural model testing. Using Bias-Corrected Bootstrapping with 5000 bootstrap samples, we tested mediation. We utilized both SPSS (version 29), and AMOS (version 29) to analyze our data.

4. Results

Descriptive Statistics and Correlations

Table 1 presents the means, standard deviations, and zero-order correlations among the study variables. The results indicate moderate to high levels of self-leadership, metacognitive skills, and self-actualization. All correlations are positive and statistically significant, providing preliminary support for the hypothesized relationships.

Table 1. Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3
1. Self-leadership	3.72	0.54	—		
2. Metacognitive skills	3.68	0.51	.62**	—	
3. Self-actualization	3.75	0.49	.58**	.65**	—

Measurement Model

The measurement model's validity and reliability were assessed through confirmatory factor analysis (CFA). The results indicated that the model fit the data well ($\chi^2/df = 2.14$; CFI = 0.94; TLI = 0.93; RMSEA = .045; SRMR = .041), all standardized factor loads in excess of .60 were significantly different than zero, thus providing evidence for convergent validity.

Construct composite reliabilities (CRs) were found to be between 0.88 and 0.96 and average variance explained (AVEs) were greater than .50 indicating that discriminant validity had been established via use of the Fornell-Larcker criteria.

Table 2. Measurement Model: Loadings, Reliability, and Validity

Construct	Loading Range	CR	AVE	$\sqrt{AVE}$
Self-leadership	0.64–0.83	0.89	0.58	0.76
Metacognitive skills	0.66–0.87	0.93	0.62	0.79

Self-actualization	0.68–0.85	0.91	0.59	0.77
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Structural Model and Hypothesis Testing

The Structural Model fits well with the Data ($\chi^2 / df = 2.21$, CFI = 0.93, TLI = 0.92, RMSEA = 0.047, SRMR = 0.043). Results from Path Analysis is shown in table three.

Self-Leadership has a statistically significant Positive Effect on Self-Actualization ($\beta = 0.34$, $p < .001$), therefore H1 was supported. Self-Leadership has a statistically Significant Positive Effect on Metacognitive Skills ($\beta = 0.62$, $p < .001$) so that H2 was supported. The Metacognitive Skills have a Statistically Significant Predictive Relationship on Self-Actualization ($\beta = 0.46$, $p < .001$), so H3 was supported.

Overall, the model accounted for 38 % of the Variance in Metacognitive Skills and 56 % of the Variance in Self Actualization.

Table 3. Structural Model Results

Hypothesis	Path	β	SE	p-value	Result
H1	Self-leadership → Self-actualization	0.34	0.05	< .001	Supported
H2	Self-leadership → Metacognition	0.62	0.04	< .001	Supported
H3	Metacognition → Self-actualization	0.46	0.05	< .001	Supported

Mediation Analysis

Metacognitive skill as a mediator was tested using Bias Corrected Bootstrapping ($n=5000$) to test the indirect effects of self-leadership on Self-Actualization via Metacognition. This supported hypothesis 4 with a significant indirect effect of self-leadership on self-actualization via metacognition

($\beta=.29$; 95% CI [.21,.38]). The total effect remained significant after the inclusion of the mediator ($\beta=.34$, $p<.01$); therefore, there is evidence for partial mediation.

Table 4. Mediation Analysis (Bootstrapping Results)

Effect Type	β	95% CI (Lower–Upper)	p-value
Total effect (c)	0.63	[0.54, 0.71]	< .001
Direct effect (c')	0.34	[0.24, 0.44]	< .001
Indirect effect (a×b)	0.29	[0.21, 0.38]	< .001

Model Fit Summary

Table 5. Structural Model Fit Indices

Fit Index	Value	Recommended Threshold
χ^2/df	2.21	< 3
CFI	0.93	> 0.90
TLI	0.92	> 0.90
RMSEA	0.047	< 0.08
SRMR	0.043	< 0.08

The results provide strong support for the proposed model. Self-leadership positively influences both metacognitive skills and self-actualization, while metacognitive skills serve as a significant partial mediator in this relationship. The model demonstrates satisfactory explanatory power and good fit, confirming the theoretical assumptions underlying the study.

5. Discussion

Hypothesis 1 was tested by determining whether or not there is a direct relationship between self-leadership and self-actualization. The findings show a statistically significant and positive relationship ($\beta = 0.34$, $p < .001$). This result supports the idea that through use of self-regulatory techniques individuals can develop personally and feel fulfilled (e.g. Bjerke, 2024; Vargas et al., 2025). In addition, previous studies have demonstrated that there exists a positive correlation between self-regulation and self-actualization (Kiaei, 2014), however those studies did find a weaker relationship than this study's findings. It is possible that the reason for the

difference is due to the type of subjects used in this study. Graduate students are required to function independently in their work; thus, they require high levels of self-motivation and autonomy. Therefore, it is probable that the increased autonomy and level of functioning will increase the influence of self-leadership on individual development.

Self-leadership had a large positive effect on the metacognitive skills of students concerning hypothesis 2. The self-leadership effect was the strongest influence among all effects in the model ($p < .001$; $\beta = .62$). This finding is consistent with earlier research that found large and statistically significant correlations between self-regulation strategies and student metacognitive awareness. Specifically, researchers have identified these associations using structural equation models to range from $\beta = .30$ to $\beta = .50$ (Zhang et al., 2019; Kim, 2019). The larger association in this study can be interpreted as indicating that self-leadership has a stronger influence on developing metacognition for students learning at the graduate level than it does for other types of students. Graduate students' need to conduct their own research, monitor themselves during research, etc. provides additional support for the theoretical prediction based on Social Cognitive Theory that self-regulatory agency promotes cognitive monitoring processes (Hennecke & B rger, 2023).

Metacognitive skills also predicted self-actualization in accordance with hypothesis 3 ($\beta = .46$, $p < .001$) consistent with prior findings by Kiaei (2014) who demonstrated a moderate positive correlation between metacognition and constructs related to well-being; as well as more recent research demonstrating how metacognitive awareness can help facilitate both adaptive learning and personal growth (Guamanga et al., 2025). Although the current study demonstrates an effect size of slightly larger magnitude compared to what would normally be expected in undergraduate samples, this is likely due to the greater level of cognitive complexity associated with pursuing graduate degrees. It appears that developing the ability to thoughtfully reflect upon one's own learning process, is a significant factor for helping individuals develop a connection to their long-range developmental goals.

The findings confirm hypothesis 4, supporting the idea that metacognitive skills are mediators for at least some of the relationship between self-leadership and self-actualization. A considerable amount of the influence of self-leadership on self-actualization occurs through the mediating role of metacognition as indicated by the substantial indirect effects of self-leadership on self-actualization ($\beta = .29$). The presence of partial mediation supports that self-leadership will impact self-actualization both directly and indirectly. Self-leadership impacts self-actualization directly, in terms of the development of goal-oriented behaviors and intrinsic motivation. Self-leadership impacts self-actualization indirectly; by enhancing metacognitive awareness which in turn allows individuals to engage in reflection-based learning and develop their own potential.

An important finding in this study was the significant amount of explained variance for each variable. However, it would be premature to interpret these results as being indicative of a relationship between the variables. A number of researchers have cautioned against interpreting large amounts of explained variance (particularly those based on self-report) as reflecting an actual relationship among constructs. There are several reasons why there might be a large amount of explained variance; for example, because multiple constructs may share similar definitions or because the data were collected using self-report methods at a single point in time. The concern about shared measurement methods is supported by many methodologists who argue that when researchers measure all their self-regulation constructs using the same method, they will often find strong relationships between them that do not actually exist.

There may be many ways that the study's results can be viewed in light of the emphasis placed upon student autonomy, research, and independent scholarly pursuits at the graduate level in Jordan. Student independence (autonomy), research participation (engagement) and independent academic work (self-direction) may have helped support the connections made in this study. Cultural influences can affect how a construct will manifest. For example, in collectivistic cultures, an

individual's desire for self-actualization may be influenced by both individual goals as well as social expectations and relationship values. The collective nature of culture, therefore, may help account for the very large and significant positive bivariate correlations between self-leadership, meta-cognitive processes, and personal growth/development found in this sample.

A number of limitations apply. A major limitation of this study is its cross-sectional design, which prevents inferring causality among variables measured. Another limitation is the use of self-report measures, which are subject to biases such as social desirability or impression management. While the sample consists only of social science students, it could limit generalizability to students from other fields. Although each instrument was shown to meet minimum requirements for reliability and validity, they were developed outside the Arab world; hence, we cannot assume they possess sufficient cultural validity. Furthermore, the fact that there are so many large and significant correlations across all pairs of constructs suggests there may exist some degree of conceptual overlap among them.

Although there are several limitations to this study, the results have many important implications for theory and practice. This study provides support for the idea that self-leadership (i.e., people's ability to lead themselves) and metacognition (i.e., people's knowledge about their own thought process) can be integrated under a single theoretical umbrella of self-regulated learning/personal growth. In addition to providing theoretical support, the results provide practical support for graduate education programs. Specifically, the results of this study suggest that graduate education could be improved by developing interventions which focus on both self-leadership and metacognition. For example, if you were to develop an intervention program designed to improve metacognition, you might include some form of structured self-leadership development activity. Similarly, if you were to design an intervention program intended to improve self-leadership, you would want to include some component of structured metacognitive training. From a university policy perspective, one way universities may improve graduate education is by

including strategy instruction related to metacognition in their graduate-level curricula, especially those courses focused on research methods.

6. Conclusion

This research contributes to our understanding of the growth of graduate students through identifying that metacognitive skills act as an important intermediate mechanism by which self-leadership influences self-actualization. By combining these concepts in a singular structural model, this work is able to go beyond associations between separate variables and provides a much more complete account of how self-regulation leads to advanced levels of personal growth.

The empirical support for the hypotheses found that self-leadership was significantly associated with both metacognitive skills ($\beta = .62$) and self-actualization ($\beta = .34$); and that metacognitive skills were also independently positively related to self-actualization ($\beta = .46$). Furthermore, the results from the mediation analyses showed that there was a significant indirect effect (.29), suggesting that a large part of the association between self-leadership and self-actualization occurs through metacognitive skills. Overall, the structural model provided an excellent fit and explained a great deal of variance in both variables; providing evidence of the validity of the theoretical framework presented.

What is significant about this finding is that self-leadership will not be enough to either explain or support self-actualization when the student has not developed metacognition (cognitive) abilities to assess, monitor, and modify their own thought processes and behaviors. Therefore, it appears there needs to be an emphasis placed on both self-regulated behavior and self-awareness/reflection in the development of future graduates. In practice, institutions of higher learning may want to begin viewing graduate education as a process where the assumption that students are developing independent skills does not exist. Graduates' graduate curriculum should include explicit metacognitive skill-building through formalized training in order to increase the likelihood that students are able to use self-leadership to achieve academic and personal success.

At the policy level, higher education institutions could include metacognitive ability building in to new student orientation programs and other academic supports. Metacognitive skills have been shown to help promote independence in learning, increase student engagement with research, and help create longer-term academic success for students.

Future research that builds upon this study will be able to use longitudinal data collection to determine

causality as well as to assess how effective is training in using metacognitive strategies through randomized experiments. Furthermore, conducting cross-cultural studies that measure if there is an equivalence in the application of the model from one culture or educational context to another will provide researchers with the knowledge required to develop a global understanding of how students learn independently and personally develop.

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