IJPES
www.ijpes.com
International Journal of Psychology and Educational Studies
ISSN: 2148-9378

# The Academic Motivation Scale: Evaluation Evidence of Intrinsic, Extrinsic, and Amotivation in Faculty of Education Students

**Mahmoud Ali Moussa[1], Abdul Nasser El Sayed Amer[2]**

[1]*Faculty of Education, Suez Canal University, Ismailia, Egypt* 0000-0002-5611-1792

[2]*Faculty of Education, Suez Canal University, Ismailia, Egypt* 0000-0002-1066-4391

ARTICLE INFO

*Article History*
Received 28.09.2023
Received in revised form 05.07.2024
Accepted 11.08.2024
Article Type: Research Article



ABSTRACT

The study aimed to develop and validate academic motivation measures among university students. The study adopted the correlational method. An available sample of university students selected from the Faculty of Education, Suez Canal University. The study sample consisted of 453 people. The scales responded online to the students after they accepted the informed consent and wrote their data online in the same submission file. The study investigated the factor structures of the Academic Motivation Scale (three-, four, five-, and seven-factor models). The seven-factor model, the four-factor model, and the five-factor model were the most appropriate. According to the convergent validity, it was positively associated with the motives of autonomy and measures of cognitive styles, However, the lack of motivation subscale was nonsignificant with the Cognitive Styles scale and the Self-motivation subscale. The study indicates the psychological validity of the academic motivation scale for university students.

Keywords:
Academic motivation; cognitive styles; self-determination theory; Amotivation.

## 1. Introduction

Given the change in concerns considering the continuation of the coronavirus epidemic, and the developments that occurred in the labor market, and given that the quality of education is the principal requirement for the development of any society (Alenezi et al., 2024; Alharbi et al., 2022), this necessitates a kind of change, evaluation, and monitoring of the nature of the required educational performance, which paved the way for improving the quality of the curricula taught. For the student teacher, in a way that increases his motivation (Rodrigues, Silva, Leal & Mainardes, 2021). Motivation is defined as factors that influence the intensity, direction, resilience, and frequency of behavior (Eryilmaz & Mammadov, 2016).

Motivation plays a crucial role in the success of learners and significantly influences the overall quality of the teaching and learning experience. One theory commonly employed to elucidate motivation is the theory of self-determination. Motivation is essential for measuring the degree of learner participation in the learning context. Fajčíková and Urbancová (2019) concluded that motivation enables the learner to discover the reasons for learning, improve competencies, discover them, and apply them. Eryilmaz & Mammadov (2016) suggests that motivation is a primary component of the learner's academic performance and perfect control over the context, characteristics, and requirements of the educational context.

The psychological literature extensively categorizes the impact of both intellectual and non-intellectual factors on academic performance and achievement. Non-intellectual factors may be more modifiable than their intelligent counterparts. Non-intellectual factors can be classified into three fundamental areas: self-concept,

[1] Corresponding author's address: Educational Psychology Department, Faculty of Education, Suez Canal University, Ismailia, Egypt
e-mail: mahmoud_muhanna@edu.suez.edu.eg

**Citation:** Moussa, M. A. & Amer, A. N. E. (2024). The academic motivation scale: Evaluation evidence of intrinsic, extrinsic, and amotivation in faculty of education students. *International Journal of Psychology and Educational Studies*, *11*(4), 283-294. https://dx.doi.org/10.52380/ijpes.2024.11.4.1302

which refers to self-esteem and self-efficacy, stimulus, and emotional reactions. These non-intellectual aspects relate to the domain of study, academic dedication, practical skills, and relationships, including relationships with family, fellow students, and teachers (Boerchi et al., 2021).

Self-determination theory suggests that humans have an innate desire for motivation and learning from birth, which is either supported or discouraged in their environment. The degree to which this natural impulse, or intrinsic motivation, is realized depends on fulfilling the individual's psychological needs. This means that satisfying these needs is a necessary precursor to extrinsic motivation. The theory of self-determination identifies three basic psychological needs that affect internal motivation: the need for competence, the need for autonomy, and the need for interdependence. At all stages of development, social contexts can create or reinforce intrinsic motivation to meet these needs (Fairchild et al., 2005).

### 1.1. Literature Review

The academic motivation theory contains three logical dimensions of motivation: intrinsic motivation, extrinsic motivation, and lack of motivation. Intrinsic motivation relates to students' achievement, perseverance, and pathways to graduation. Exploration and curiosity for the task distinguish instant messaging from behaviors driven by external pressures or rewards. This tendency toward spontaneous attention and mastery in learning predicts academic behavior, including perseverance on challenging tasks, deep learning strategies, academic performance, school and college social connectedness, and well-being (Al-Hadi & Mossa, 2018; Vo et al., 2021).

Intrinsic motivation depends on time and context, and intrinsic motivation to learn declines from primary to secondary school. Factors such as extrinsic rewards (such as grades) reduce the autonomy support necessary for intrinsic motivation. The increased use of external consequences (negative feedback) may affect a student's motivational orientation with age (Allen et al., 2008). A more psychometric view of internal motivation, it is concerned with identifying beliefs and behaviors that are compatible with internal motivation among university students, specifically the areas of challenge, control, curiosity, and professional expectations (Vo et al., 2021). Rodrigues et al. (2021) showed another view that classifies motivational forces into three main categories (lack of motivation, extrinsic motivation, and intrinsic motivation) as the followings:

- Amotivation is the lower end of the self-determination continuum of motivation, which indicates a state of lack of any intention to act (Nie, Chua, Yeung, Ryan, & Chan, 2015). It is an absence of intention or leadership (Yaman, 2013).
- Intrinsic motivation refers to behaviors arising from an ingrained interest and enjoyment in tasks and reflected in an individual's natural tendency to seek novelty, challenge, exploration, and learning for their own sake. This type of motivation represents the higher end of the chain link in self-determination theory (Ni et al., 2015). Yaman (2013) defined it as the motivation to pursue an activity simply for the pleasure and satisfaction derived from it, while intrinsic motivation occurs when individuals engage in a behavior for personal enjoyment or satisfaction. It indicates why an activity is performed because of happiness or gratification. It is linked to innate needs for sufficiency and self-determination and depends on a person's freedom to choose their activity and performance (Alharbi et al., 2024; Khalilzadeh and Khoudi, 2021; Scifres et al., 2021). Intrinsic motivation requires a kind of desire and will to learn to play a prominent role in knowledge acquisition and transmission (Usan et al., 2022). Intrinsic motivation depends on internal and personal factors such as needs, interests, and curiosity, and the activity is rewarding (Yaman, 2013).
- Extrinsic motivation is the pursuit of activity out of a sense of obligation (Yaman, 2013), and simply relates to activities pursued for beneficial purposes. Extrinsic motivation can be divided into four different sections ranging from higher to lower levels of self-determination theory confirmed by Khalilzadeh and Khoudi (2021); and Scifres et al. (2021). Extrinsic motivation is goal-directed and can be divided into externally regulated behavior, internal regulation, and regulation through identification (Usan et al., 2022).

Learning involves a three-dimensional scenario shaped by the interaction of three categories of internal and external motivation, as well as a lack of motivation. These factors collectively impact the learner's capacity to attain success and contribute to the improvement of their well-being and sense of satisfaction (Pintrich, 2003).

Barkoukis et al. (2008) developed a 28-item seven dimensions scale in an academic context. Hanousek-Monge & Hegarty (2015) applied a measure of academic motivation to a sample of various business administration majors with a bachelor's degree and concluded that extrinsic motivation outperformed the sample more than intrinsic motivation.

Vallerand et al. (1992) a scale for measuring academic motivation based on the self-determination theory construction, but it consists of seven dimensions divided into external motivation into three types (external, introspective, and identified regulation), internal motivation into three types (motivation for knowledge, toward accomplishment, simulation experience), and amotivation. Extrinsic motivation diverged as the following (Ardeńska et al., 2016):

- External regulation motivation refers to external rules associated with rewards and penalties, and they refer to the ability of opportunities to act according to the external control of others, in the sense that the individual acts to obtain a desired result or avoid an unwanted person, so his activity required to achieve those ends (Gagné & Deci, 2005).
- Introspective motivation, called external introjected motivation, is accepted in the perception processes that occur via sensory receptors (Ardeńska et al., 2016). In which the behavioral regulation and the values associated with it are absorbed, and internal assimilation refers to the person who deals with the values, attitudes, and organizational structure (Gagné & Deci, 2005).
- Identified regulation, which is accepted after the assimilation process that occurred in the introspective motive using identification. It is considered by one as one's own. Therefore, the identified regulation defined in this concept approximates the intrinsic motivation and this occurs with practice for the sake of satisfaction and obtaining pleasure (Ardeńska et al., 2016). In which more independent types of self-regulated motivation are fixed in a manner consistent with the individual's personal goals and values (Nie et al., 2015).

Self-determination theory is an empirical theory of human motivation and personality in social contexts that distinguishes motivation in terms of being independent and subject to learner control or not (Deci & Ryan, 2012). The motives play an influential role in the performance of the learner, and the theory of self-determination identified several types of motives along a continuum from the weakest to the strongest, and the role of this chain appears in professional employment, and social life (Hegarty, 2010). More contextual factors play along this continuum, including (Vallerand, 2000):

- Leisure: The external motive is purely from pleasure because the learner performs his work and tasks to obtain a benefit, ward off punishment, and obtain an exact variety of adaptations (Natalya & Purwanto, 2018). The motivation to accomplish a task may be external coercion or a desire to gain a reward, and therefore the learner does not feel a sense of independence. Pleasure often comes from the crescent of the learner’s saturation with knowledge and his ability to perform his tasks in a way that makes him satisfied with himself and his academic life and a sense of professional growth as a result of being full of vitality and activity in achieving his goals (Deci & Ryan, 2012).
- Relationships between personality, and often the nature of personal relationships, occur through the type of treatment resulting from the external regulation of behavior and the assimilation of values and attitudes, and the organizational structure that regulates the nature of tasks, and thus the assimilation of values and attitudes. regulation structures are seen as a regulation that governs the work of individuals among themselves, whether through work participatory or independent (Gagné & Deci, 2005).
- Learning competencies occur through self-regulation processes to absorb and saturate the learner with tasks and achieve integration between task performance and academic results (Deci & Ryan, 2012).
- Autonomy: Social factors related to the learning environment affect the learner's autonomy, preferences, and need for satisfaction, which itself is reflected in motivation and leads to results. Autonomy often results from intrinsic motivation, whereby the learner feels cohesive and responsible for their learning to the extent that it drives them to strive for academic results. Instead, the pleasure stems from his sense of pleasure in success and the appearance of arrogance in the eyes of his colleagues (Natalya & Purwanto, 2018).

Learning is an adaptive attitude that enables the learner to achieve his potential in the light of his competencies that make him accept complex tasks, choose them, choose the mission, and determine the reason for choosing it considering the positive feedback known as mastery goals and performance goals. In mastery goals, the student is motivated by the positive experience involved in learning something new, while in performance goals, the learner is motivated by outperforming others (Hegarty, 2010).

Internal motivation has a more positive impact on learning outcomes on the learner's performance, however, more types of external motivation (external regulation) and amotivation have negative consequences, and these consequences occur on three levels of generality (contextual, general, situational) (Vallerand, 2000). Situational motives lead to situational consequences related to levels of interest in a specific pattern of the task at a set time, and general motivation relates to the nature of the individual's satisfaction with his academic life (Vallerand, 2000). While lack of motivation is associated with academic burnout, which is defined as a loss of interest and passion in academic subjects and a sense of non-commitment to academic tasks, accompanied by a kind of self-doubt regarding their ability to adapt, and the learner suffers from academic burnout syndrome (Usan et al., 2022).

Ardeńska et al. (2016) found a good fit in the light of confirmatory factor analysis of the seven-factor model for 28 items of academic motivation scale ($\chi 2 = 706.13$; df = 350; $p < .001$; GFI = .79; AGFI = .75), which is less than that match obtained by Vallerand et al. (1992) in this form. In addition to the superiority of the four factors model in the confirmatory analysis across the Turkish and Polish sample of twenty-two items for the same scale. The alpha coefficient across buildings was 0.78 for the Polish image and 0.82 for the Turkish image. The four-factor model consisted of the internal motivation factor for achievement, the motivation factor for accomplishment and simulation, the third factor, which is external organization motivation, and the fourth factor is Amotivation.

Chong & Ahmed (2012) proved the factor structure conformity in the Malaysian environment, for a sample of 1919 students in different universities for a sample of the first, second, and final grades. Correlations between the residuals of the items to improve the fit of the 28-item seven-model structure. The stability of internal consistency with alpha coefficient ranged from 0.708 to 0.804. The results also revealed that the student's motivation was linked to externally external regulated motives, external motives with internal (introspective) reasons, and internal motives for knowledge. Therefore, the study seeks to:

- Comparison between the factor structure of the academic motivation scale (the three-factor model, the five-factor model, and the seven-factor model).
- Verification of the convergent validity of the Academic Motivation Scale

## 2. Methodology

### 2.1.Research Model and Sample

The study depends on an analytical approach and cross-sectional design. An available sample has been drawn and consisted of 453 male and female students of the Faculty of Education in Ismailia, Suez Canal University. The sample divided by gender into 32 (7.1%) males and 421 (92.9%) females and divided by academic level into 193 (42.6%) in the second year, 21 (4.6%) in the third year, 234 (51.7%) in the fourth year, and 5 (1.1%) in postgraduate studies. The sample was divided by academic status into 438 (96.7%) newcomers, 10 (2.2%) remaining to repeat, and 5 (11%) from abroad. The participants' age ranged from 18 to 29 years, with an average age of 20.56 years, and a standard deviation of 1.44 years.

### 2.2. Data Collection Tools and Procedure

*Autonomous Motivation Scale*: Use the image developed by Maulana et al. (2016) which agrees with the self-determination motivation theory of Ryan & Deci (2000). The scale consisted of 8 positively formulated items. The first four items are distributed on the determination motivation dimension and items (4-8) on the self-motivation dimension. The response Likert scale points modified to a five-point scale instead of four, which ranged from fully applicable = 5 degrees to not fully applicable = 1.

*Academic Motivation Scale:* The scale consisted of 29 items, every four items distributed in each dimension, and the Amotivation sub-scale contained five items. A five-point Likert scale was chosen for the response on each

item. A higher score on a subscale indicates a higher level of academic motivation, while a higher score on the Amotivation subscale indicates a lower level of motivation.

*Cognitive Styles Scale:* The researchers relied on the scale by Fuhrmann & Jacobs (1980) due to its ease and devoid of the implied forms upon which psychological research relied and which require visual-spatial intelligence. The scale aims to measure the dependent and independent domain of the individual on the perceptual field. The cognitive style is the unique way in which each learner collects and processes information, i.e., how to process, classify, and evaluate input information. The scale consists of 36 items, to which the individual responds with a mark in front of the term that applies to him, and the scale is corrected by placing a score in front of each term that applies to the respondent, and a zero is given if he does not respond to the item. The high score indicates the independence of the perceptual domain for cognitive learning, while the low score is an indicator of the learning-dependent domain. The stability of the scale using Cronbach's alpha equaled 0.73. The construct validity using CFA revealed a good fit for the model (X2= 5249.14, P=.000, RMSEA= .16, NNFI= .96, GFI= .95, SRMR= .096, AGFI= .95) and Cronbach's alpha is .958 according to Moussa & Abu Akur (2022).

### 2.4. Data Analysis

Lisrel 8.8 was used to test three structures by CFA, namely: 1) The three-factor model, which is general internal motivation, general external motivation, and lack of motivation. 2) The five-factor model, according to Deci and Ryan (1985) of self-determination theory, considers that the dimensions are general internal motivation, the three sub-measures of extrinsic motivation, and lack of motivation. and 3) the seven-factor model which is based on the proposal of Vallerand et al. (1992). Criterion validity was conducted by studying the relationships between independence motivation and academic motivation.

### 2.5. Ethical

Ethical consideration: Undergraduate students at the College of Education got familiar with the objectives of the study, and the researchers introduced the students to their rights and duties in this study as the possibility of withdrawing from the study whenever the learner finds this appropriate. The learner's signature on the application and completion of his data is considered an explicit approval of the study charter by number 15 and date 23 January 2023. The application was carried out away from the classroom through various social media platforms for students. The Scientific Research Ethics Committee approved the implementation of the study, and the two researchers also obtained the approval of the Council of the Educational Psychology Department for the activities of the study.

## 3. Findings

### 3.1. Construct Validity of Autonomous Motivation Scale

The results found reliability for the determinant motive 0.87 and the internal motivation 0.88 for the scale. The study verified the structure of the scale using confirmatory factor analysis using the maximum likelihood method, and the fitted indicators were acceptable. RMSEA = .087; $x^2$= 89.5 (P=1.00, df= 19); NNFI = .97; GFI = .96; AGFI = .92. The item loadings were as follows:

**Table 1.** *Autonomous Motivation Item Factor Loadings*

| Items<br>I am currently studying in this major because..... | Factor loadings | Std error | t |
|---|---|---|---|
| 1. I want to learn new things | .61 | .045 | 13.72 |
| 2. I consider this specialty serious to my attitudes | .84 | .040 | 21.02 |
| 3. This represents a valuable option for me. | .78 | .041 | 19.08 |
| 4. Because I want to achieve a social goal in my life | .66 | .044 | 15.15 |
| 5. Because this major enables me to achieve success easily and quickly (*) | .81 | .040 | 20.09 |
| 6. I enjoy studying this major | .82 | .040 | 20.45 |
| 7. I can find many career options in the future (*) | .63 | .044 | 14.32 |
| 8. I find consolation in the closeness of this specialty with my previous tendencies (*) | .54 | .046 | 11.83 |

Notes: (*) means the phrase has been changed or modified to be suitable for study participants.

The loadings of the determinant motive dimension ranged between 0.61 to 0.84, which is medium to high, with an average of 0.72, while the loadings of the internal motive dimension ranged between 0.54 to 0.82, which is medium to high, with an average of 0.70, which means that the values of the averages of the item loadings of the two dimensions are close, and therefore the two motives may be complementary or alternating. However, the motive of determination prevails in the learner behavior in university education.

### 3.2. Structural Validity of the Academic Motivation Model

The confirmatory factor analysis was used to determine the competitiveness of the three models of academic motivation structures. Lisrel 8.8 software performs the analysis by the maximum likelihood method. The goodness of fit indicators are as follows:

**Table 2.** *Goodness of Fit For o Competitive Model of Academic Motivation.*

| Structures | RMSEA | *x2* | GFI | NNFI | SRMR | AGFI | Order |
|---|---|---|---|---|---|---|---|
| 3 factors | .087 | 1403.6 | .80 | .92 | .075 | .77 | 4 |
| 4 factors | .065 | 337.3 | .92 | .95 | .067 | .89 | 2 |
| 5 factors | .067 | 1109.7 | .86 | .94 | .066 | .83 | 3 |
| Seven factors | .060 | 908.5 | .88 | .95 | .065 | .85 | 1 |

The goodness of fit indices of the seven-factor model was higher than its counterpart, while the four-factor model was close in its fit to the seven-factor model. The five-factor model came in the third rank according to its fit. Then, the three-factor model did not fit well, and it came in the final rank. The reason the factors of the seven-factor model have higher fitted is that the subscales of seven-factor construction work together, and the lack of motivation resisted by a set of internal factors such as the unconscious regulation, which is specific to knowledge, and the motivation for knowledge and achievement is a drive for the learner to achieve a goal that the learner seeks to do as simulation or by example, the motive of imitation works together with the external organization unconsciously to achieve the learning goals. The seven-factor model has a good specification by getting relationships between error covariances between pairs of items, the GFI = .91, NNFI= .95, SRMR= .066, AGFI= .87.

### 3.3. The Seven-Factor Model Structure

The indicators of good fit were acceptable, but the chi-square index was statistically significant, this may be due to the large sample size, or the nature of the data included in the analysis. The item loadings of the seven factors were as shown:

**Table 3**. *Item Factor Loadings of Seven-Factor Academic Motivation Structure*

| Subscale | Items | Factor loading | Std error | t-value |
|---|---|---|---|---|
| Intrinsic motivation to know (IMK) | 1 | .66 | .048 | 13.83 |
| | 2 | .68 | .048 | 14.15 |
| | 3 | .53 | .050 | 10.56 |
| | 4 | .49 | .050 | 9.76 |
| motivation toward accomplishment (IMA) | 5 | .65 | .045 | 14.29 |
| | 6 | .76 | .043 | 17.63 |
| | 7 | .69 | .045 | 15.57 |
| | 8 | .68 | .045 | 15.12 |
| Intrinsic motivation to experience stimulation (IMS) | 9 | .53 | .048 | 10.75 |
| | 10 | .60 | .047 | 12.68 |
| | 11 | .63 | .047 | 13.49 |
| | 12 | .70 | .046 | 15.31 |
| Identified regulation (IDR) | 13 | .24 | .053 | 4.42 |
| | 14 | .72 | .049 | 14.83 |
| | 15 | .63 | .049 | 12.70 |
| | 16 | .67 | .049 | 13.70 |
| Introjected regulation (IJR) | 17 | .62 | .046 | 13.54 |
| | 18 | .70 | .044 | 15.98 |

| | | | | |
|---|---|---|---|---|
| | 19 | .71 | .044 | 16.24 |
| | 20 | .75 | .043 | 17.62 |
| External regulation (ER) | 21 | .76 | .042 | 18.19 |
| | 22 | .75 | .042 | 17.75 |
| | 23 | .82 | .041 | 20.16 |
| | 24 | .81 | .041 | 20.04 |
| Amotivation (AM) | 25 | .67 | .044 | 15.01 |
| | 26 | .095 | .051 | 1.87 |
| | 27 | .75 | .043 | 17.44 |
| | 28 | .82 | .041 | 19.80 |
| | 29 | .82 | .041 | 19.84 |

The item loadings of the Intrinsic motivation to know dimension ranged between 0.49 to 0.68, which are medium loadings, while the loadings for the items for the Intrinsic motivation toward completion dimension ranged from 0.65 to 0.76. The loadings for intrinsic motivation to experience stimulation dimension ranged from 0.53 to 0.70. The item loadings of the Identified regulation subscale ranged from 0.24 to 0.72, the item loadings of the Introjected regulation subscale ranged from 0.62 to 0.75, and the item loadings of the External regulation subscale ranged from 0.75 to 0.82. The item loadings for the Amotivation dimension ranged from 0.095 to 0.82, and item 26 was excluded from the analysis.

### 3.4. Convergent Validity

According to the convergent criterion validity using the Pearson correlation coefficient between the academic motivation structure and the Autonomous motivation subscales. The results were as shown:

**Table 4.** *Correlation Matrix According to Convergent Validity Analysis*

| Subscale | Autonomous motivation | | Cognitive styles |
|---|---|---|---|
| | Determinant motivation | Self-motivation | |
| Intrinsic motivation to know (IMK) | .43** | .38** | .38** |
| Intrinsic motivation toward accomplishment (IMA) | .39** | .36** | .37** |
| Intrinsic motivation to experience stimulation (IMS) | .39** | .39** | .46** |
| General Intrinsic motivation | .48** | .45** | .48** |
| Identified regulation (IDR) | .31** | .26** | .25** |
| Introjected regulation (IJR) | .47** | .42** | .43** |
| External regulation (ER) | .47** | .49** | .51** |
| General External motivation | .53** | .50** | .51** |
| Amotivation (AM) | -.14** | -.07 | -.017 |

**Notes**: * P ≤ .05, ** P ≤ .01, and *** P ≤ .001

The correlation coefficients between the academic motivation subscales and the identified motivation as a dimension of the Autonomous motives ranged from 0.31 to 0.47, while the relationship between the identified motivation and Amotivation was -0.14, which is a logical inverse relationship. The correlation coefficients between self-motivation as a dimension of Autonomous motives and the academic motivation subscales ranged from 0.26 to 0.49, but the relationship between self-motivation and Amotivation was not statistically significant. This means that the lack of motivation from the academic perspective does not preclude the existence of self-motivation among the learners. Also, the lack of academic motivation is necessarily due to an increase in identifying the motives of identified or self-determination, in the sense that the more intense the individual's motivation. Specifically, it leads to the disappearance of the learner's motivation due to defeat or repeated failure to which he is exposed. Accordingly, this indicated the convergent validity of autonomous motivation and academic motivation. The results also showed positive correlations between the academic motivation structure by the learning styles scale (independence and dependence on the cognitive domain).

### 3.1. Descriptive Characteristics

IBM SPSS v.20 was used to estimate the descriptive indicators of scale dimensions considering the three-factor, five-factor, and seven-factor models. The results were as shown:

**Table 5.** *Descriptive statistics Indicators for the three competing factorial models.*

| Subscale | Mean | Variance | Skewness | Kurtosis | Cronbach's Alpha |
|---|---|---|---|---|---|
| Intrinsic motivation to know (IMK) | 17.50 | 4.86 | -1.13 | 2.67 | .64 |
| Intrinsic motivation toward accomplishment (IMA) | 18.15 | 5.38 | -1.99 | 6.32 | .78 |
| Intrinsic motivation to experience stimulation (IMS) | 16.96 | 6.14 | -1.05 | 2.20 | .69 |
| General Intrinsic motivation | 52.62 | 53 | -1.52 | 5.81 | .85 |
| Identified regulation (IDR) | 17.59 | 5.42 | -1.38 | 3.08 | .57 |
| Introjected regulation (IJR) | 18.07 | 5.96 | -1.94 | 5.95 | .78 |
| External regulation (ER) | 17.17 | 9.45 | -1.34 | 1.94 | .86 |
| General External motivation | 52.83 | 39.61 | -1.43 | 4.31 | .85 |
| Amotivation (AM) | 14.49 | 21 | 37 | .46 | .78 |

The results showed the following:

**Three-factor model**: From the results, it is clear from the variation of the three-factor model that internal motivation is the highest possible, which shows the widening of individual differences among university students in internal motivation, while the lack of motivation is the least possible in the three factors model, and this means that the lack of motivation may accompany some Frustrating affairs, excessive training, social events that keep pace with the world, or social changes in the learning process, or university learning's recreation of quality and global competition.

**The Four-Factor Model**: It is clear from the average values that the internal motivation factor domination, this exists confirmed by the high value of kurtosis of this factor, then the external motivation for organization, then the Intrinsic motivation to experience stimulation. Almost, therefore, Amotivation may be a negative pole for these three dimensions.

**The Five Factors Model**: It is clear that the dimensions of external motivation are convergent on average, which shows that these three factors work together alternately with internal motivation, to achieve self-regulation, and in an unconscious way that may indicate the learner's cognitive absorption, while the factor of external regulation of motivation was its variance. High, refers to the individual differences of the undergraduate learner in handling or reshaping the stimuli of the external environment and adapting changes to achieve benefits from learning resources, and this is what Ryan et al. (2019) do. When one reflects on the values of the skewness of the five factors, it becomes clear that the skewness is close except in the case of the internal motivation, which is higher, which indicates that the drive towards achieving learning goals is the internal motivation as a driving force for the learner's behavior. As evidence of the learner's arrival at the stage of cognitive absorption, the degree of kurtosis after unconscious regulation is 5.95, which indicates a convergence of degrees in distribution. Then comes the general internal motivation, with a degree of kurtosis of 5.81.

**The Seven-Factor Model**: The values of variance in the dimensions of the external regulation (9.45) and Intrinsic motivation to experience stimulation (IMS) outperformed the sample (6.14). This means that the university student depends on the motive of imitation in learning, whether by example, by modeling in solving problems, or by adopting unified ways of thinking in a way that may prevent thinking at higher levels. This indicated by the value of variation in the external organization, i.e. the learner follows a kind of systemic thinking instead of critical, reflective thinking in satisfying their academic motives, and the motivation for achievement had a value of kurtosis of 6.32, which indicates the convergence of achievement motives among all students, as it converges among the students of the band The second and fourth grades, and the justification for selecting the two groups is the dominance of students in the sample, as the value of the

independent t-test for them was (t = .15, p = .876), and the average achievement motivation for students of the second year was 18.22, and the mean for the fourth year was 18.18.

## 4. Discussion and Conclusion

Motivation is defined as the motivation to do a certain action or behavior. Considering the self-determination theory of Ryan & Deci (2000), motivation is an emotional or psychological phenomenon that includes three dimensions (internal motivation, external motivation, and lack of motivation). Internal motivation reflects the highest degree of self-determination as it is associated with states of self-satisfaction, through the implementation of behaviors voluntarily even in cases of not receiving support or motivation. External motivation is related to the enforcement of behaviors and actions to achieve sequential goals.

Extrinsic motivation includes sub-motives, such as identified regulation, which is associated with an individual's choice to perform a behavior or action because the student can assess that this behavior is significant for one reason or another. The implementation of the behavior, behavior is freed of a stressful environment, as the behavior stems from the individual's compatibility with the educational situation variables. External regulation refers to individuals through behavior regulation to control restrictions. While Amotivation refers to the fading of internal and external motivation.

The study aimed to provide evidence of the appropriate global construction to explain the academic motivation phenomenon among university students according to the self-determination theory. About the differences between the academic levels, the study sample was selected from two phases, the second and fourth years, for two reasons: 1) The availability of large numbers of students at a close rate in both groups, and 2) It is a transitional opportunity through which students can only finish their studies, so the student cannot leave the band for a second unless he completes all his courses and succeeds in all subjects. The Academic Motivation Scale is used as a commonly used tool for assessing motivation in a learning environment.

The results supported the seven-factor construction of the Egyptian version of the academic motivation scale proposed by Vallerand et al. (1992), and the indicators of good fit were acceptable and satisfactory, and all the item loadings on the factors were statistically significant except for item 26, which excluded from the construction. The alpha coefficients for the sub-dimensions of the scale were acceptable. The scale did not support the existence of differences between the different academic levels. In this study, the researchers did not use the first year of work based on the results of Yaman's (2013) study, which considers that the academic motivation of first-year university students is not unpractical or useful.

### 4.1. Limitation

The study was based on university student participants in the College of Education as pre-service teachers. The study also tried to use another scale to verify motivation considering the theory of self-determination to reduce the bias resulting from judgment by using the measure of academic motivation. The results can be generalized to samples of students of nonclinical faculties and faculties of education in other universities. The study's temporal limits for the implementation of the study's activities refer to the period of 12 days.

The study attempted to eliminate biases in decision-making regarding the university student’s motivation. The study calculated the convergent validity of the academic motivation scale with the independent motivation scale, which was established according to self-determination theory, and the relationships were positive between both dimensions of the two measures. The study suffers from a gender determinant, as the number of females exceeds the male sample, which will make the results illogical and biased and may generate a type 1 error in decision-making about motivation. Also, the results conducted on the College of Education sample, it cannot be generalized across the entire community of students from other colleges. The research

recommended that the study will be achieved for more numbers of participants representing the university college community and the various Egyptian universities.

**Conflict of interest**

Authors have no conflicts of interest with the organization or individuals to declare. There are no physical or psychological risks to the sample. The conflict may be generated through the inflation of the response given by the learner about his performance in the dimensions of Academic motivation. This problem can be overcome by preparing and educating the sample members before applying the study tools.

**Informed consent**

All procedures followed were following the ethical standards of the responsible committee on human experimentation (institutional and national) and the Helsinki Declaration of 2013. Informed consent was obtained from all participants to be included in the study electronically. The ethical approval was obtained from the Ismailia Faculty of Education committee on number 15 on 23 January 2023.

**Data availability**

The raw data supporting the conclusion of this article will be available upon request to the corresponding author.

**Funding:** The corresponding author acknowledged that the study has no funding to declare.

## 5. References

Alenezi, A. K., Alanazi, F. S., Moussa, M. A., & Alnaimi, I. A. (2024). The trait emotional ıntelligence as an ındicator for mental health within Saudi society: Assessment Study. *Educational Administration: Theory and Practice*, *30*(5), 10670-10679.

Al-Hadi, T. M. Mossa, Mahmoud Ali (2018). *Evaluate the virtual learning environment as an input to improve teaching effectiveness in the light of 21st century skills*. In The 5th and 2nd International Scientific Conference of the Arab Society for Measurement and Evaluation, entitled" Evaluation: An Introduction to the Quality of Education" held at Thebes Academy in Maadi-Cairo (August 4, 2018).(In Arabic).

Alharbi, B. A., Ibrahem, U. M., Moussa, M. A., Abdelwahab, S. M., & Diab, H. M. (2022). COVID-19 the gateway for future learning: The impact of online teaching on the future learning environment. *Education Sciences*, *12*(12), 917.

Alharbi, B. A., Ibrahem, U. M., Moussa, M. A., Alrashidy, M. A., Radi, B. A., & Diab, H. M. (2024). Personal elearning management in the context of COVID-19 among university students in Saudi Arabia. *African Journal of Reproductive Health*, *28*(4), 111-126.

Allen, J., Robbins, S. B., Casillas, A., & Oh, I. S. (2008). Third-year college retention and transfer: Effects of academic performance, motivation, and social connectedness. *Research in Higher Education, 49*(7), 647-664.

Ardeńska, A., Tomik, R., Berber, S., Düz, B., Çivak, B., Çalişkan, U., & Ogrodnik, J. (2016). A comparison of physical education students' motivation using Polish and Turkish versions of the academic motivation scale. *Journal of Human Kinetics, 54*, 207.

Barkoukis, V., Tsorbatzoudis, H., Grouios, G., & Sideridis, G. (2008). The assessment of intrinsic and extrinsic motivation and amotivation: Validity and reliability of the Greek version of the Academic Motivation Scale. *Assessment in Education: Principles, Policy & Practice, 15*(1), 39-55.

Boerchi, D., Magnano, P., & Lodi, E. (2021). The high school competencies scale (H-Comp Scale): A first validation study. *European Journal of Investigation in Health, Psychology and Education, 11*(2), 570-584.

Chong, Y. S., & Ahmed, P. K. (2012). Understanding student motivation in higher education participation: A psychometric validation of the academic motivation scale in the Malaysian context. *International Proceedings of Economics Development and Research, 53*(26), 118-122.

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268.

Deci, E. L., & Ryan, R. M. (2012). *Self-determination theory*. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416–436). Sage.

Eryilmaz, A., & Mammadov, M. (2016). Developing the scale of factors increasing study motivation. *Journal of European Education, 6(*2), 23-37.

Fairchild, A. J., Horst, S. J., Finney, S. J., & Barron, K. E. (2005). Evaluating existing and new validity evidence for the Academic Motivation Scale. *Contemporary Educational Psychology, 30*(3), 331-358.

Fajčíková, A., & Urbancová, H. (2019). Factors influencing students' motivation to seek higher education—A case study at a State University in the Czech Republic. *Sustainability, 11*(17), 4699.

Fuhrmann, B. S., & Jacobs, R. (1980). *The learning interactions inventory*. Ronnie Jacobs Associates.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26*(4), 331-362.

Hanousek-Monge, M. B. A., & Hegarty, N. (2015). The measurement of student motivation: Does one scale do it all? *Journal of Higher Education Theory and Practice, 15*(1).

Hegarty, N. (2010). Application of the academic motivation scale to graduate school students. *The Journal of Human Resource and Adult Learning, 6*(2), 48.

Khalilzadeh, S., & Khodi, A. (2021). Teachers' personality traits and students' motivation: A structural equation modeling analysis. *Current Psychology, 40*(4), 1635-1650.

Maulana, R., Helms-Lorenz, M., Irnidayanti, Y., & van de Grift, W. (2016). Autonomous motivation in the Indonesian classroom: Relationship with teacher support through the lens of self-determination theory. *The Asia-Pacific Education Researcher, 25*(3), 441-451.

Moussa, M. A. & Abu Akur, M. N. (2022). Field dependence- independence differences in the critical writing performance in the criminal psychology course among Port Said University students [in Arabic]. *Arab Journal of Educational and Psychological Sciences, 6*(29), 177- 204. Retrieved from: https://journals.ekb.eg/article_258812.html

Natalya, L., & Purwanto, C. V. (2018). Exploratory and confirmatory factor analysis of the academic motivation scale (AMS)–Bahasa Indonesia. *Makara Human Behavior Studies in Asia, 22*(1), 29-42.

Nie, Y., Chua, B. L., Yeung, A. S., Ryan, R. M., & Chan, W. Y. (2015). The importance of autonomy support and the mediating role of work motivation for well-being: Testing self-determination theory in a Chinese work organization. *International Journal of Psychology, 50*(4), 245-255.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology, 95*(4), 667.

Rodrigues, R. G., Silva, R., Leal, C., & Mainardes, E. W. (2021). Marketing differences study motivations between Luso and Brazil students. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(2), 124.

Scifres, E. L., Cox, M., Crocker, R. M., Mishra, R., & Scott, G. W. (2021). Academic motivation and the undergraduate business major. *Journal of Education for Business*, 1-10.

Usán, P., Salavera, C., Quílez-Robres, A., & Lozano-Blasco, R. (2022). Behavior patterns between academic motivation, burnout and academic performance in primary school students. *International Journal of Environmental Research and Public Health, 19*(19), 12663.

Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*(4), 312-318.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement, 52*(4), 1003-1017.

Vo, T. T., Ullrich-French, S., & French, B. F. (2021). Psychometric properties of the academic ıntrinsic motivation scale in a high school context. *Journal of Psychoeducational Assessment, 39*(3), 354-360.

Yaman, K. S. (2013). Academic motivation of the first-year university students and the self-determination theory. *Educational Research and Reviews, 8*(8), 418-424.