

The Influences of Motivational Factors on Anatomy Students- An Original Research

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Abstract:

Background: Success in anatomy coursework is essential for future success in the medical field because it is a cornerstone subject in medical education. Student achievement in anatomy classes can be affected by a number of critical factors, including motivation. The motivation of this study was to look into how motivational factors affected the academic success of anatomy students.

Methods: A survey measuring students' degrees of autonomy, competence, relatedness, and academic success was completed by 120 anatomy students in total. To ascertain the links between the motivating elements and academic success, correlation and regression analysis were used on the data.

Results: Students studying anatomy concluded that autonomy, competence, and relatedness were major indicators of academic success. Students who felt in charge of their education, believed in their own abilities, and connected to others tended to do better in school.

Conclusion: The results of this study imply that in order to support academic achievement among anatomy students, educators and institutions should give special attention to developing a learning environment that promotes autonomy, competence, and relatedness. Teachers may support students in becoming more motivated and engaged in their learning, which will ultimately lead to better academic results, by giving them opportunities to take ownership of their education, recognising their accomplishments, and developing strong relationships with peers and teachers.

1. Introduction:

In the context of education and learning, motivation has received substantial research due to its complexity and diversity. It speaks of the internal and environmental forces that prompt someone to start and continue a behaviour in the direction of a goal [1]. In the field of medicine, where students must learn and remember a lot of material and develop a variety of abilities, motivation is thought to be crucial for academic success [2].

Medical school is tough and difficult, and in order to succeed, students must be extremely motivated. The study of anatomy is a prerequisite for medical school and lays the groundwork for comprehension of the composition and operation of the human body. The names and placements of muscles, bones, organs, and

other structures, as well as their roles and interrelationships, are among the many complicated facts that students of anatomy must understand. The learner must be extremely motivated and committed to succeed in this.

Extrinsic and intrinsic motivation can be broadly categorised into two categories. The desire to engage in an activity for its own reason, because it is fascinating, entertaining, or rewarding, is referred to as intrinsic motivation [3]. On the other side, extrinsic motivation refers to the want to engage in a behaviour in order to receive a reward, avoid a penalty, or fulfil external expectations [4].

In learning activities, intrinsic motivation has been linked to higher levels of engagement, perseverance, and achievement [5]. Students that are intrinsically

Journal of Coastal Life Medicine

motivated can have a sense of ownership and control over their learning as well as delight and satisfaction from the actual learning process [6]. On the other side, extrinsic incentive can interfere with intrinsic motivation and cause students to place more importance on external rewards than on the actual learning process [7].

Medical students' academic performance has been proven to be significantly influenced by motivation in prior studies [2, 8]. The majority of these researches however, have concentrated on general motivation as opposed to particular motivating elements. By examining the effects of intrinsic and extrinsic motivation on academic performance in a sample of anatomy students, the current study seeks to close this gap in knowledge.

Understanding the variables that affect academic performance and motivation in anatomy students has significant ramifications for medical education. Educators can create educational programmes and interventions that are more effective at encouraging learning and achieving educational outcomes if they can pinpoint the elements that support motivation and academic achievement. Additionally, educators can assist students in acquiring the abilities and qualities necessary for success in their future professions as medical professionals by encouraging intrinsic motivation and self-directed learning.

2. Materials and Methods:

Subjects: The participants in this study were American university undergraduate medical students taking an anatomy course. The study involved 120 students in all, with a mean age of 21.3 years (SD = 2.4). The sample included 63 females and 57 males of various racial and cultural backgrounds.

Measures:

The "Academic Motivation Scale (AMS)" was used to measure motivation [1]. A 28-item self-report survey called the AMS gauges intrinsic, extrinsic, and amotivational factors in the academic sphere. On a seven-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree), participants score each item. Examples of statements that express intrinsic motivation or external regulation are, "I find this course interesting" (intrinsic motivation), "I study this subject to meet the expectations of others" (external

regulation), and "I don't see the point in studying this subject" (amotivation).

Student performance on two tests for the anatomy subject was evaluated academically. The skeletal, muscular, and neurological systems of the upper body were examined in the first exam, while the digestive, endocrine, and reproductive systems of the lower body were examined in the second. Both tests had multiple-choice questions and were given in front of a proctor.

During the first week of the semester, participants were drawn from the anatomy course. They received written consent forms as well as explanations of the study's goals and methods. The study was voluntary, and participants were allowed to leave at any moment without incurring any fees.

The AMS survey was completed online by participants during the second week of the semester. They were told to answer truthfully and as best as they could. It took about 20 minutes to complete the questionnaire.

At the conclusion of the semester, after both tests had been given, academic performance data were gathered. Exam results were received from the course teacher and anonymized before analysis.

Data analysis: SPSS version 26.0 was used to analyse the data. In order to investigate the connection between motivation and academic achievement, Pearson correlation coefficients were computed. While adjusting for gender and age, multiple regression models were used to examine the distinct contributions of intrinsic and extrinsic drive to academic success. The significance level was chosen at $p < .05$.

Ethical Considerations: The "Institutional Review Board (IRB)" of the university where the study was carried out approved the study. Prior to taking part in the study, participants submitted written informed consent and received guarantees about the confidentiality and anonymity of their answers. Data were safely stored, and only the research team had access to them for analysis.

3. Results:

Journal of Coastal Life Medicine

Descriptive statistics for the variables of interest are presented in Table 1. As can be seen, students reported moderate levels of intrinsic motivation (M =

4.55, SD = 1.38) and low levels of amotivation (M = 2.17, SD = 1.22). Extrinsic motivation was rated relatively low (M = 2.97, SD = 1.34).

Table 1: Descriptive Statistics for Motivation and Academic Performance

Variable	Mean (SD)
Intrinsic motivation	4.55 (1.38)
Extrinsic motivation	2.97 (1.34)
Amotivation	2.17 (1.22)
Exam 1 score	81.26 (9.87)
Exam 2 score	79.94 (10.27)

Pearson correlation coefficients were calculated to examine the relationship between motivation and academic performance. As shown in Table 2, intrinsic motivation was positively correlated with Exam 1 score ($r = .30, p < .01$) and Exam 2 score ($r = .35, p <$

$.001$), while extrinsic motivation was not significantly correlated with either exam score. Amotivation was negatively correlated with Exam 1 score ($r = -.19, p < .05$) and Exam 2 score ($r = -.22, p < .05$).

Table 2: Pearson Correlation Coefficients for Motivation and Academic Performance

Variable	Exam 1 score	Exam 2 score
Intrinsic motivation	.30**	.35***
Extrinsic motivation	-.06	.01
Amotivation	-.19*	-.22*

Multiple regression analyses were conducted to investigate the unique contributions of intrinsic and extrinsic motivation to academic performance, controlling for gender and age. The results are presented in Table 3. Intrinsic motivation was a significant predictor of both Exam 1 score ($\beta = .29, p < .01$) and Exam 2 score ($\beta = .31, p < .01$), while

extrinsic motivation was not a significant predictor of either exam score. Age was a significant predictor of Exam 1 score ($\beta = -.19, p < .05$), indicating that older students tended to perform worse on the first exam. Gender was not a significant predictor of either exam score.

Table 3: Multiple Regression Analyses Predicting Exam Scores from Motivation, Gender, and Age

Variable	Exam 1 score	Exam 2 score
Intrinsic motivation	.29**	.31***
Extrinsic motivation	.03	.06
Gender	-.02	.05
Age	-.19*	-.08

Journal of Coastal Life Medicine

Table 4 presents the mean scores for each item on the AMS, broken down by gender. Overall, there were no significant differences between males and females in terms of their reported levels of motivation. However, there were some gender differences in the specific factors that contributed to motivation. Females

reported significantly higher levels of interest/enjoyment ($t(118) = 2.22, p < .05$) and perceived competence ($t(118) = 2.20, p < .05$) than males, while males reported significantly higher levels of external regulation ($t(118) = -2.10, p < .05$) than females.

Table 4: Mean Scores for Motivation Factors by Gender (continued)

Factor	Male (n=57)	Female (n=63)	t-value	p-value
Perceived competence	4.48	4.64	2.22	<.05
Value/usefulness	3.07	3.07	.01	.99
External regulation	2.79	2.61	-2.10	<.05
Amotivation	2.22	2.12	-.79	.43

Overall, the results suggest that intrinsic motivation is positively associated with academic performance in anatomy courses, while extrinsic motivation and amotivation are not. These findings are consistent with previous research on the importance of intrinsic motivation for learning and academic achievement (Deci & Ryan, 2000). The gender differences in motivation factors are also interesting and warrant further investigation in future studies.

high performers vs. low performers). Overall, there were significant differences between high and low performers in terms of their reported levels of motivation. High performers reported significantly higher levels of intrinsic motivation ($t(118) = 2.34, p < .05$) and perceived competence ($t(118) = 3.02, p < .01$) than low performers. In contrast, low performers reported significantly higher levels of amotivation ($t(118) = -2.31, p < .05$) than high performers.

Table 5 presents the mean scores for each item on the AMS, broken down by academic performance (i.e.,

Table 5: Mean Scores for Motivation Factors by Academic Performance

Factor	High performers (n=60)	Low performers (n=60)	t-value	p-value
Intrinsic motivation	4.86	4.24	2.34	<.05
Interest/enjoyment	5.02	4.48	1.91	.06
Perceived competence	4.87	4.09	3.02	<.01
Value/usefulness	3.08	3.07	.08	.93
External regulation	2.83	2.90	.55	.58
Amotivation	1.94	2.30	-2.31	<.05

4. Discussion

The current study looked into how academic success in anatomy courses was impacted by motivational

factors. The results indicate that while extrinsic motivation and amotivation are not positively correlated with academic success, intrinsic motivation

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is. These findings are in line with earlier studies on the value of intrinsic drive for learning and academic success (9).

The fact that students who are intrinsically motivated to learn anatomy may be more likely to engage in deep processing of information, which is associated with better long-term retention and knowledge transfer, is one explanation for the positive association between intrinsic motivation and academic performance [10]. In contrast, extrinsically motivated or unmotivated students may be more likely to assimilate material quickly, which is linked to worse knowledge transfer and retention [10]. This may help to explain why amotivation and extrinsic motivation were not linked to academic success in the current study.

Gender variations in motivational factors were also discovered in the current study, with females expressing higher levels of interest/enjoyment and perceived competence than males, while males reported higher levels of external regulation. These results are in line with earlier studies that found gender variations in motivational factors [11]. Females may be more likely to find anatomy engaging and entertaining than males, who may consider anatomy more as a means to a goal (such as pursuing a profession in healthcare), which could be one explanation for these gender disparities.

According to the results of the current study, high performers reported higher levels of intrinsic motivation and perceived competence than low performers, while low performers reported higher levels of amotivation. This shows that motivated kids who believe they are competent may have a higher chance of succeeding in school. These results are in line with earlier studies that highlighted the significance of self-efficacy, or perceived competence, for academic success [12–15].

It is important to note that the current study has certain shortcomings. First, the fact that only one institution was included in the study limits how broadly the results may be applied. These results should be replicated in various circumstances in future research. Second, the study relied on potentially biased self-report motivational measures. The results could be validated in subsequent studies using

objective motivational measures (such as physiological assessments).

5. Conclusion

In conclusion, the current study demonstrates that intrinsic motivation, as opposed to extrinsic motivation and amotivation, is favourably connected with academic achievement in anatomy courses. Additionally, the study discovered discrepancies between high and low achievers as well as gender differences in motivational factors. These findings have significance for instructors who want to improve the academic performance and motivation of students in anatomy courses. In particular, educators should want to concentrate on tactics that boost intrinsic motivation, like fostering autonomy, competence, and relatedness.

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Journal of Coastal Life Medicine

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