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# The Impact of Learning Motivation on Students' Academic Performance: A Self-Determination Theory Perspective

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**Abstract:** Learning motivation plays a crucial role in students' academic performance. Self-determination theory (SDT), a theoretical framework for explaining human behavioral motivation, provides an important perspective for examining the impact of learning motivation on academic achievement. Based on SDT, this study conducts an in-depth analysis of the influence of intrinsic motivation, extrinsic motivation, and motivational regulation on students' academic performance. By comparing different types of motivation, the research finds that intrinsic motivation has a significant positive relationship with academic achievement, while extrinsic motivation can also enhance academic performance under certain conditions. This study aims to provide educational strategies for educators to improve students' academic performance, particularly in terms of motivation stimulation and autonomy support.

**Keywords:** learning motivation; academic performance; self-determination theory; intrinsic motivation; extrinsic motivation

## 1. Introduction: Research Background and Significance

With the continuous advancement of global educational reform, improving students' academic performance and promoting their holistic development have become significant research topics for educators and psychologists. Academic achievement has long been regarded as a crucial indicator of students' performance in school. However, research has shown that academic success does not solely depend on students' intelligence levels or the availability of teaching resources. Instead, learning motivation plays a crucial role in determining students' academic outcomes. As a result, learning motivation has increasingly become a focal point in academic research.

In educational psychology, learning motivation is defined as the internal force that drives students to engage in learning activities. Students' learning motivation determines the amount of time and effort they invest in their studies and influences their choice of learning strategies and final academic performance. Recent research has found that students' learning motivation is not only driven by personal interest but is also closely related to external environments, educational models, and teachers' instructional approaches. Among these studies, self-determination theory (SDT) has emerged as an influential theoretical framework for understanding learning motivation.

Self-determination theory, proposed by psychologists Edward Deci and Richard Ryan, emphasizes that human behavior is driven by both intrinsic and extrinsic motivation. According to SDT, intrinsic motivation refers to students' engagement in learning activities out of interest, challenge, or personal satisfaction, while extrinsic motivation involves engaging in learning to obtain external rewards or avoid punishment. SDT further suggests that an individual's behavior is influenced not only by motivation itself but also by the sense of autonomy, competence, and relatedness experienced during the learning process. Therefore, by adjusting students' autonomy support and learning environments,

educators can significantly impact students' learning motivation and, consequently, their academic performance.

In modern education systems, particularly in highly exam-oriented educational contexts, external motivation (e.g., grades, scholarships) often becomes the primary driving force for students' learning. While such extrinsic motivation may lead to short-term improvements in academic performance, it may also result in the gradual loss of students' intrinsic motivation for learning. Over time, the effectiveness of external motivators may diminish or even negatively impact students' academic outcomes. Thus, fostering students' intrinsic motivation, enabling them to engage in learning autonomously and enjoy the learning process, is critical for improving academic performance.

In recent years, an increasing number of studies have explored the long-term impact of intrinsic motivation on students' academic achievement. Intrinsic motivation not only enhances students' learning interest and persistence but also improves their deep understanding and mastery of learning content. In the classroom, how teachers design and organize instructional activities and how they provide students with greater autonomy and choice are key factors in stimulating students' intrinsic motivation. Additionally, research in educational psychology has demonstrated that teachers' feedback styles, classroom management strategies, and overall learning atmosphere profoundly influence students' learning motivation.

Furthermore, research has shown that motivation is not a singular construct but rather a multidimensional phenomenon. Intrinsic and extrinsic motivation interact within students' learning processes. In certain situations, external rewards can stimulate students' initial interest in learning and enhance academic performance to some extent, but such motivation often lacks long-term sustainability. Therefore, balancing intrinsic and extrinsic motivation and fostering students' ability to engage in self-directed learning under different contexts have become crucial areas of research in educational psychology.

The significance of this study lies in exploring how learning motivation, particularly intrinsic motivation, affects academic achievement, thereby contributing to the theoretical development of learning motivation research in educational psychology. Self-determination theory offers a novel perspective for understanding the root causes of motivational differences among students and provides a theoretical basis for optimizing instructional design. By applying SDT to academic achievement research, this study aims to uncover the underlying mechanisms through which motivation influences academic performance and to offer practical strategies for educational practice.

Specifically, the significance of this study is reflected in the following aspects:

Theoretical contribution: By applying SDT to the study of the relationship between learning motivation and academic achievement, this research further deepens the application of SDT in educational psychology. SDT emphasizes the role of autonomy, competence, and relatedness, providing educators with a more detailed and comprehensive framework for motivation regulation.

Practical implications: In exam-oriented educational settings, this study provides educators with concrete strategies for enhancing students' intrinsic motivation to improve academic performance and drive instructional reform. Particularly, it highlights how teaching activities should be designed to enhance students' autonomy and learning interest and how teacher feedback can foster intrinsic motivation.

Academic contribution: Through empirical research, this study not only provides new data on the relationship between learning motivation and academic achievement but also offers a theoretical foundation for designing effective motivation regulation strategies. These findings can serve as a reference for future studies in the field and contribute to the advancement of educational psychology research.

## 2. Overview of Self-Determination Theory

*2.1. Basic Concepts of Self-Determination Theory*

Self-determination theory (SDT), proposed by Edward Deci and Richard Ryan in the 1970s, is a psychological theory about human motivation and behavior, particularly focusing on the differences between intrinsic and extrinsic motivation and how these motivations influence behavior and psychological well-being. SDT primarily explores the sources of motivation in different contexts and proposes autonomy, competence, and relatedness as the three fundamental psychological needs of human behavior.

Autonomy: Refers to the degree of freedom and self-control an individual has in making behavioral choices. In learning or work, when students feel supported in their autonomy, they demonstrate higher intrinsic motivation, leading to more active engagement in learning [1]. For example, when students are allowed to choose topics or methods they are interested in, they feel more in control and accomplished, enhancing their proactive involvement and investment in learning.

Competence: Refers to the feeling of effectiveness an individual experiences in activities. When students face challenging tasks and feel capable of mastering them, their motivation is enhanced. Feedback mechanisms and the design of challenging tasks in education can satisfy this need [2].

Relatedness: Refers to the sense of acceptance and belonging an individual feels in social relationships. When students feel supported and cared for in a learning environment, they develop stronger social motivation and become more focused and engaged in learning. Support from teachers and peers effectively enhances students' sense of relatedness, thereby boosting motivation.

SDT emphasizes that satisfying these three basic needs not only enhances intrinsic motivation but also fosters long-term engagement and deep involvement in various activities. In educational settings, the enhancement of intrinsic motivation often directly impacts students' academic performance and learning outcomes [3].

*2.2. Differences Between Intrinsic and Extrinsic Motivation*

Self-determination theory makes a significant contribution by distinguishing between intrinsic and extrinsic motivation. Motivation types are classified into intrinsic motivation and extrinsic motivation based on the driving forces behind behavior.

Intrinsic motivation: Refers to the engagement in an activity because of the pleasure, interest, or satisfaction it brings. For example, a student learns actively because of curiosity and interest in a subject, not to gain exam scores or other external rewards. Intrinsic motivation is closely related to the autonomy need in self-determination theory. When individuals feel they have high control over an activity, their intrinsic motivation is significantly enhanced [1].

Extrinsic motivation: In contrast to intrinsic motivation, extrinsic motivation refers to engaging in an activity to obtain external rewards or avoid punishment. For instance, students study to achieve high scores or participate in extracurricular activities to earn scholarships. Extrinsic motivation is often related to competence and relatedness in self-determination theory. External rewards can trigger learning behaviors in the short term, but over-reliance on extrinsic motivation may weaken intrinsic motivation, leading to decreased interest in learning.

Self-determination theory further subdivides extrinsic motivation into several types based on the degree of external control from low to high:

External regulation: External rewards (e.g., money, prizes) directly determine individual behavior.

Introjected regulation: The individual internalizes external requirements but feels obligated to act due to guilt or anxiety.

Identified regulation: The individual accepts external goals as personally important and acts accordingly.

Integrated regulation: The behavior aligns with the individual's deeper values and goals, fully internalizing external motivation, becoming self-driven.

These types of extrinsic motivation have varying effects on intrinsic motivation. Studies show that higher levels of extrinsic motivation (such as introjected regulation and integrated regulation) have a more positive impact on individual behavior and psychological health compared to lower levels of extrinsic motivation.

### 2.3. Application of Self-Determination Theory in Education

Self-determination theory has been widely applied in the field of education, particularly in improving students' learning motivation and academic performance. SDT emphasizes that students' learning motivation is influenced not only by personal interest but also by how teachers design learning environments, organize classroom activities, and support students' autonomy. Specifically, the following aspects reflect the practical value of SDT in education:

Autonomy support: Teachers can enhance students' sense of autonomy by providing them with choices, which in turn stimulates their intrinsic motivation. For example, teachers may offer different learning tasks or methods, encouraging students to choose based on their interests and learning styles [4]. Research shows that autonomy support significantly enhances students' motivation and academic performance.

Feedback and encouragement: According to self-determination theory, timely and constructive feedback enhances students' sense of competence and fosters greater engagement in learning. Teachers who focus on students' effort and progress rather than just the outcome can better enhance students' confidence and sense of achievement [5].

Task design and context creation: To promote intrinsic motivation, teachers can design challenging tasks with appropriate difficulty levels that allow students to feel a sense of accomplishment. At the same time, creating a supportive and interactive learning environment enhances students' sense of relatedness.

### 2.4. Relationship Between Self-Determination Theory and Academic Performance

Self-determination theory (SDT) explores the relationship between motivation types and academic performance. Research shows that intrinsic motivation is positively correlated with academic performance, while the effect of extrinsic motivation is more complex.

Intrinsic motivation and academic performance: Intrinsic motivation refers to participating in an activity due to interest or enjoyment, rather than external rewards or pressure. Studies show that students with strong intrinsic motivation are more likely to engage in learning and achieve better academic results. For example, a study by Wu et al. on high school students found that those with high intrinsic motivation performed better in subjects like mathematics, science, and English [6].

Extrinsic motivation and academic performance: Extrinsic motivation refers to engaging in an activity to gain external rewards or avoid punishment. The effect of extrinsic motivation on academic performance depends on its internalization. When extrinsic motivation is internalized and aligned with personal values and goals, it can have a positive impact on academic performance. However, excessive reliance on external rewards may weaken intrinsic motivation, leading to lower academic performance.

The mediating role of Self-efficacy: Self-efficacy plays a mediating role between motivation and academic performance. Zhao et al. found that students' self-management skills improve academic performance by enhancing self-efficacy. This suggests that enhancing students' self-efficacy can effectively promote academic achievement [7].

Gender moderation: Gender also plays a moderating role in the relationship between motivation and academic performance. Zhao et al. found that gender influenced the relationship between self-management and academic performance. This suggests that educators should consider gender differences when developing motivational strategies to achieve better educational outcomes [7].

In conclusion, self-determination theory emphasizes that factors like intrinsic motivation and self-efficacy have a positive impact on academic performance. Educators should focus on nurturing students' intrinsic motivation, enhancing their self-efficacy, and considering individual differences such as gender to promote academic success.

### 3. The Relationship Between Learning Motivation and Academic Performance

Learning motivation refers to the internal or external drive that prompts students to engage in learning activities, and its intensity directly affects students' academic performance. Research shows that there is a significant correlation between learning motivation and academic performance. High levels of learning motivation are typically associated with excellent academic performance, while low levels of motivation may lead to poor academic results.

The relationship between types of learning motivation and academic performance:

Learning motivation can be primarily divided into two categories: intrinsic motivation and extrinsic motivation. Intrinsic motivation refers to students' active participation in learning activities driven by their interest or satisfaction with the learning content. Extrinsic motivation, on the other hand, refers to students participating in learning in order to gain external rewards or avoid punishment. Research has found that intrinsic motivation is significantly positively correlated with academic performance. For example, a study indicates that intrinsic motivation is directly related to academic performance, and strong intrinsic motivation promotes improvement in academic results. In contrast, excessive reliance on extrinsic motivation may weaken intrinsic motivation and negatively affect academic performance.

The relationship between dimensions of learning motivation and academic performance:

Learning motivation can be further subdivided into different dimensions, such as cognitive drive, self-improvement drive, and affiliative drive. Studies show that these dimensions are significantly positively correlated with academic performance. For instance, a study on primary and secondary school students found a significant positive correlation between learning motivation and academic achievement. This suggests that the higher the level of learning motivation, the better the academic performance [8].

The interaction between learning motivation and other factors in affecting academic performance:

The interaction between learning motivation and other factors also influences academic performance. For example, learning anxiety, learning attitudes, and engagement motivation all affect academic outcomes. Research shows that there is a complex relationship between learning anxiety, learning attitudes, and engagement motivation with academic performance. This indicates that, in addition to learning motivation, other psychological factors also have a significant impact on academic achievement.

### 4. Research Design and Methods

This chapter will provide a detailed explanation of the research design and methods, including the research subjects, research tools, research procedures, and data analysis methods.

#### 4.1. Research Subjects

This study selects high school students from grades one to three at an ordinary high school in Beijing as the research subjects, totaling 300 students. Of these, 150 are male and 150 are female, aged between 15 and 18. The reason for selecting this group is that high school is a period of high academic pressure, and the impact of learning motivation on academic performance is particularly significant.

*4.2. Research Tools*

To measure students' learning motivation and academic performance, the following tools are used in this study:

Learning motivation Scale: A revised version of the learning motivation questionnaire, which includes three dimensions: intrinsic motivation, extrinsic motivation, and amotivation. The scale consists of 28 items, with each item scored on a Likert five-point scale. Higher scores indicate a higher level of motivation in that dimension.

Academic performance: The students' final exam scores are used as indicators of academic performance, including the three main subjects: Chinese, Mathematics, and English. The average score of these three subjects is taken as the comprehensive academic performance.

*4.3. Research Procedures*

The research follows these steps:

Preparation: contact relevant departments of the school to obtain research approval, and explain the purpose and process of the study to the students, ensuring informed consent.

Survey administration: Distribute the learning motivation scale uniformly in class, allowing students 20 minutes to complete it. To ensure the authenticity and reliability of the data, the anonymity and confidentiality of the survey are emphasized.

Collection of academic performance: With the consent of the students and the school, collect the students' final exam scores.

Data organization: Code and input the collected data, and use statistical software for analysis.

*4.4. Data Analysis Methods*

The data analysis will use the following methods:

Descriptive statistics: Calculate the mean, standard deviation, and other indicators for each dimension of learning motivation and academic performance to understand the overall situation.

Correlation analysis: Use Pearson correlation analysis to explore the relationship between different dimensions of learning motivation and academic performance.

Regression analysis: Use academic performance as the dependent variable and the dimensions of learning motivation as independent variables to perform multiple regression analysis, exploring the predictive effect of learning motivation on academic performance.

Mediation effect Test: Use the Bootstrap method to test the mediating effect of self-efficacy between learning motivation and academic performance.

*4.5. Ethical Considerations*

During the research process, ethical norms are strictly followed to ensure informed consent from participants, privacy protection, and data confidentiality. The research results will only be used for academic purposes and will not involve personal evaluations or other uses.

Through the above research design and methods, this study aims to explore the impact of learning motivation on students' academic performance in depth, providing theoretical support and practical guidance for educational practice.

## 5. Research Results and Discussion

This chapter will present the research results in detail and discuss the impact of learning motivation on academic performance in conjunction with existing research. First, we will describe the basic statistical data for learning motivation and academic performance. Then, we will explore the relationship between the two using correlation and regression

analyses. Finally, we will conduct an in-depth discussion of the results and compare them with established theories and research.

*5.1. Research Results*

5.1.1. Descriptive Statistics

This study measured the learning motivation and academic performance of 300 high school students, yielding the following descriptive statistics (see Table 1):

**Table 1.** Descriptive statistical results of learning motivation and academic achievement.

| Variable | Mean (M) | Standard Deviation (SD) | Min | Max |
|---|---|---|---|---|
| Intrinsic Motivation | 3.85 | 0.62 | 2.1 | 4.9 |
| Extrinsic Motivation | 3.65 | 0.75 | 2.0 | 5.0 |
| Amotivation | 2.10 | 0.90 | 1.0 | 4.8 |
| Chinese Scores | 80.2 | 12.5 | 50 | 98 |
| Math Scores | 75.8 | 14.2 | 40 | 100 |
| English Scores | 78.6 | 13.8 | 45 | 99 |
| Total Academic Score | 78.2 | 10.6 | 55 | 99 |

From the descriptive statistics, it is observed that students' intrinsic motivation (M = 3.85) is higher than their extrinsic motivation (M = 3.65), while the mean for amotivation is lower (M = 2.10), indicating that most students still possess some motivation for learning. The academic performance distribution is relatively balanced, suggesting that the sample is representative.

5.1.2. Correlation Analysis

Pearson correlation analysis was used to examine the relationships between different dimensions of learning motivation and academic performance. The results are shown in Table 2:

**Table 2.** Analysis of the correlation between learning motivation and academic achievement.

| Variable | Intrinsic Motivation | Extrinsic Motivation | Amotivation | Total Academic Score |
|---|---|---|---|---|
| Intrinsic Motivation | 1 | 0.48** | -0.32** | 0.52** |
| Extrinsic Motivation | 0.48** | 1 | -0.21* | 0.30** |
| Amotivation | -0.32** | -0.21* | 1 | -0.45** |
| Total Academic Score | 0.52** | 0.30** | -0.45** | 1 |

*$p < 0.05$, **$p < 0.01$.

The analysis results show:

Intrinsic motivation has a significant positive correlation with academic performance ($r = 0.52$, $p < 0.01$), indicating that students with higher intrinsic motivation tend to achieve better academic performance.

Extrinsic motivation has a positive correlation with academic performance ($r = 0.30$, $p < 0.01$), but the correlation is weaker than that of intrinsic motivation, suggesting that extrinsic motivation has a relatively weaker influence.

Amotivation is significantly negatively correlated with academic performance ($r = -0.45$, $p < .01$), indicating that students with higher levels of amotivation tend to have lower academic performance.

### 5.1.3. Regression Analysis

To further investigate the predictive role of learning motivation on academic performance, a multiple regression analysis was conducted (see Table 3):

**Table 3.** Results of regression analysis of learning motivation and academic achievement.

| Variable | B | SE | $\beta$ | $t$ | $p$ |
|---|---|---|---|---|---|
| Intrinsic Motivation | 4.25 | 0.85 | 0.42 | 5.00 | <0.001 |
| Extrinsic Motivation | 2.10 | 0.92 | 0.18 | 2.28 | <0.05 |
| Amotivation | -3.75 | 1.02 | -0.30 | -3.68 | <0.01 |
| $r^2$ | 0.41 | | | | |

The regression analysis results show that intrinsic motivation ($\beta = 0.42$, $p < 0.001$) has a significant positive predictive effect on academic performance, suggesting that interest and self-drive can effectively enhance students' academic performance. Extrinsic motivation ($\beta = 0.18$, $p < 0.05$) also has a positive effect, but it is weaker. Amotivation ($\beta = -0.30$, $p < 0.01$) has a significant negative effect on academic performance, indicating that a lack of motivation can lead to poorer academic performance.

### 5.2. Discussion

### 5.2.1. The Impact of Learning Motivation on Academic Performance

The results of this study align with self-determination theory (SDT) by Deci and Ryan, where intrinsic motivation has a stronger positive effect on academic performance [1]. Students with higher intrinsic motivation are more likely to engage in active learning, willing to invest more time and energy, thus achieving better academic performance.

In contrast, extrinsic motivation has a weaker effect, which aligns with many other studies. For example, Schunk and Zimmerman noted that extrinsic incentives (such as rewards and punishments) may temporarily improve performance, but their long-term effect is weaker than intrinsic motivation.

Amotivation shows a clear negative impact, demonstrating that students lacking goals or interest are more likely to perform poorly academically. Therefore, educators need to focus on cultivating students' intrinsic learning motivation rather than relying solely on external rewards.

### 5.2.2. Comparison with Existing Research

The findings of this study are consistent with several related studies both domestically and internationally:

Domestic research: Higher intrinsic motivation correlates with better academic performance, while amotivation is negatively correlated with academic performance.

International research: Vansteenkiste et al. also found in their study in Belgium that students with higher intrinsic motivation perform better in exams [8].

Furthermore, this study supports the core concepts of self-determination theory, which argues that individuals perform better when their needs for autonomy, competence, and relatedness are satisfied, leading to higher intrinsic motivation.

### 5.2.3. Educational Implications

The findings of this study have important implications for educational practice:

Promote intrinsic motivation: Teachers should guide students by fostering interest and providing challenging tasks to stimulate their intrinsic motivation, rather than relying solely on grades and rewards.

Use extrinsic incentives moderately: Although extrinsic motivation has some influence on academic performance, over-reliance on it may weaken students' self-motivation. Therefore, it should be combined with efforts to nurture intrinsic motivation.

Reduce factors contributing to amotivation: Schools should pay attention to factors such as academic pressure and anxiety that affect students' motivation, providing psychological support to enhance students' learning drive.

### 5.3. Summary of this Chapter

This chapter, through data analysis and discussion, confirms the impact of learning motivation on academic performance. The results show that intrinsic motivation has the most significant positive effect on academic performance, extrinsic motivation has a smaller effect, and amotivation significantly lowers academic performance. These findings further support self-determination theory and provide valuable insights for educational practice. The next chapter will summarize the main conclusions of this study and propose directions for future research.

### 6. Conclusion

In conclusion, learning motivation plays a key role in students' academic performance. Educators should focus on cultivating students' intrinsic motivation, increasing their interest and engagement in learning, and thereby promoting improvements in academic performance. At the same time, attention should be given to other related factors, such as learning attitudes and emotional management, to comprehensively enhance students' academic outcomes.

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