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THE RELATIONSHIP BETWEEN GROWTH MINDSET AND ACADEMIC ACHIEVEMENT AMONG UNIVERSITY STUDENTS

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Abstract

this article provides a theoretical and analytical examination of the psychological nature of growth mindset among higher education students, the mechanisms through which it develops, and its relationship with academic achievement. Drawing on the implicit theories of intelligence developed by the American psychologist Carol Dweck, the study analyzes the psychological connections among individuals' beliefs about the malleability of intellectual abilities, academic motivation, self-regulation, responses to challenges, and academic outcomes. It also examines how growth and fixed mindsets may influence students' learning activities, how they interpret failure, and the significance of psychological resilience in education. Based on international empirical studies and meta-analyses, the article discusses both the potential and the limitations of psychological and educational approaches designed to cultivate a growth mindset. Practical recommendations are proposed for developing university students' intellectual potential, increasing their academic engagement, and improving their independent learning strategies.

Keywords

growth mindset, academic achievement, student psychology, intelligence, academic motivation, self-regulation, psychological resilience, academic engagement, reflection, personal development.

INTRODUCTION

In contemporary higher education, students' academic achievement depends not only on their intellectual abilities, level of knowledge, or the content of educational programs. The effectiveness of learning is also closely associated with students' attitudes toward their own abilities, their motivation to learn, their interpretations of failure, their psychological resilience, and their desire for self-development.

In particular, fostering independent thinking, increasing students' readiness to tackle complex tasks, and developing their capacity for critical analysis and continuous improvement of knowledge are among the important psychological and pedagogical objectives of higher education institutions.

In this process, individuals' beliefs about the nature of intellectual abilities are particularly important. Some students perceive intellectual ability and talent as relatively fixed traits, whereas others believe that intellectual capacities can develop through knowledge acquisition, experience, effective practice, and education.

In psychology, these views are described by the concepts of a fixed mindset and a growth mindset, respectively.

Developed by the American psychologist Carol Dweck, this framework theoretically explains how individuals' beliefs about their intellectual potential may be associated with their academic motivation, goal-setting patterns, and responses to challenges.

Students with a growth mindset regard their abilities not as entirely limited capacities but as psychological resources that can be developed through education, purposeful effort, effective strategies, and social support.

However, this mindset is neither the sole nor a guaranteed determinant of academic achievement. Academic outcomes also depend on factors such as teaching quality, socioeconomic circumstances, prior preparation, health, and the learning environment.

From this perspective, investigating the relationship between growth mindset and academic achievement among students through a comprehensive psychological approach is of considerable scientific relevance.

The aim of the study is to analyze the psychological content of growth mindset and its relationship with academic achievement on the basis of the scientific literature, and to identify psychological and pedagogical opportunities for developing this mindset in higher education.

The objectives of the study are to explain the scientific foundations of growth mindset theory, examine its connections with academic motivation and self-regulation,

critically compare existing empirical evidence, and develop evidence-informed recommendations for educational practice.

RESEARCH METHODOLOGY

This article is a theoretical and analytical study employing methods of scientific literature analysis, comparison, synthesis, and theoretical modeling in the fields of psychology and education.

The theoretical foundation of the analysis comprises C. Dweck's implicit theory of intelligence; longitudinal research by L. Blackwell and colleagues; experimental findings reported by D. Yeager and colleagues; and meta-analytical studies conducted by V. Sisk, B. Macnamara, and their collaborators.

Three principal analytical directions were identified: the cognitive and motivational mechanisms of growth mindset; empirical evidence both supporting and qualifying its association with academic outcomes; and opportunities to develop this psychological characteristic in higher education institutions.

The article is not based on new survey or experimental data collected by its author from students. Accordingly, its conclusions should be interpreted as an analytical synthesis of existing scientific research.

MAIN BODY

1. The Theoretical and Psychological Nature of Growth Mindset

Growth mindset refers to a system of psychological beliefs that an individual's intellectual abilities, knowledge, and competencies can be developed to a certain extent.

According to Dweck's theory, people may hold different implicit beliefs about the nature of intelligence. The first perspective treats intelligence as a relatively stable characteristic, whereas the second views it as a characteristic capable of development.

A student inclined toward a fixed mindset may interpret failure as evidence of personal inability. For example, after failing to solve a difficult mathematics problem, the student may reach the categorical conclusion: "I have no ability in mathematics."

A student inclined toward a growth mindset, by contrast, may attribute the same difficulty to insufficient knowledge or an unsuitable strategy and respond: "I cannot solve this problem yet; I need to learn another method."

The fundamental difference between these two approaches lies not in assessing the current level of intellectual ability but in believing whether that ability can change in the future.

Psychological criterion	Fixed mindset	Growth mindset
Beliefs about intelligence	Relatively fixed	Capable of development
Response to challenges	May be perceived as a threat to ability	May be perceived as an opportunity to learn
Interpretation of mistakes	A sign of personal weakness	A source of analysis and correction
Learning goal	A desire to demonstrate ability	A desire to acquire knowledge and skills
Critical feedback	May be taken as personal judgment	May be treated as information for improvement
Learning strategy	May repeat an ineffective method or avoid a task	Inclination to change strategies and seek help

The table represents general tendencies within the theory; individual students do not necessarily follow only one mindset in every situation.

It is scientifically inaccurate to equate growth mindset with merely thinking positively or believing that "people can achieve absolutely anything they want." Its psychological essence consists of acknowledging the possibility of development, analyzing errors, and selecting effective learning strategies suited to actual circumstances.

Moreover, mindsets are not absolute or immutable personality types. A student may hold a growth-oriented view of language learning while retaining a relatively fixed belief about their mathematical ability.

Therefore, this concept is best examined not as a uniform and stable characteristic of students' personalities, but as a system of psychological beliefs that may vary across specific academic situations.

2. The Relationship Between Growth Mindset and Academic Motivation

Academic motivation is the system of internal and external incentives that directs a student toward gaining knowledge, completing educational tasks, achieving goals, and developing personal capabilities.

The relationship between growth mindset and academic motivation is manifested primarily in how students interpret the outcomes of their learning activities.

If students believe that their abilities can be developed, they may interpret failure not as the final limit of their potential, but as an indication that their knowledge and skills need improvement.

Such a psychological approach is associated with adopting mastery-oriented goals in the learning process. In this case, the student focuses primarily on acquiring particular knowledge or competence rather than proving superiority over others.

Consider, for example, two students who receive the same low grade. The first may conclude, “I cannot master this subject,” and lose interest in subsequent classes. The second may analyze their mistakes, seek advice from the teacher, consult additional literature, and change their preparation strategy.

This hypothetical example illustrates how students may respond psychologically in different ways to the same academic outcome.

Research by L. Blackwell, K. Trzesniewski, and C. Dweck (2007) found that beliefs about the possibility of developing intelligence were associated with adolescents’ academic motivation and mathematics performance. Their longitudinal study of 373 seventh-grade students showed that belief in the malleability of intelligence was related to a more favorable trajectory of mathematics grades over the following two years.

These findings suggest that growth mindset may serve as a potential psychological resource for academic motivation. Nevertheless, because the research involved schoolchildren, caution is required when generalizing its results directly to university students.

Theoretically, the relationship between growth mindset and academic motivation can be described through the following sequence:

Belief that abilities can be developed

Mastery-oriented goals and motivation

Effective strategies, effort, and reflection

An increased likelihood of academic achievement

Figure 1. A theoretical model of a possible psychological mechanism linking growth mindset and academic achievement.

This model is not a deterministic causal chain; rather, it is a theoretical representation of interconnected psychological processes.

3. Psychological Mechanisms of Academic Achievement

Academic achievement is a complex and multidimensional concept that is not limited to examination grades or overall measures of academic performance. It also encompasses applying knowledge in practice, independent learning, acquiring professional competencies, solving problems, and intellectual development.

The association between growth mindset and academic achievement may be explained through several psychological mechanisms.

First, cognitive flexibility. Students inclined toward a growth mindset may be more willing to reconsider ineffective learning strategies. For example, instead of simply rereading material repeatedly, they may choose techniques such as self-testing, spaced repetition, or identifying connections among concepts. However, actually using such strategies requires explicit instruction and practice.

Second, self-regulation. To achieve academic success, students need to establish clear learning goals, manage their time effectively, monitor their progress, and adjust their activities when necessary. Growth mindset may provide a motivational foundation for these processes.

Third, reinterpretation of mistakes. Fear of making mistakes can restrict academic engagement. When students perceive mistakes as evidence of intellectual weakness, they may avoid difficult tasks. Conversely, treating mistakes as part of the learning process creates psychological opportunities to analyze problems and experiment with new strategies.

Fourth, academic perseverance. Continuing to learn despite complex assignments, low grades, or unsuccessful experiences is important for academic achievement. Growth mindset may be associated with motivation to overcome challenges. At the same time, perseverance does not mean endlessly continuing ineffective efforts; it also involves seeking help or changing learning methods when needed.

Fifth, academic self-efficacy. This concept refers to students' confidence in their ability to complete a specific task successfully. Growth mindset, by contrast, concerns a more general belief that abilities can be developed. Thus, although these psychological constructs are closely related, they are not identical.

Consequently, it is more appropriate to understand the relationship between growth mindset and academic achievement as a complex psychological process potentially operating through academic motivation, goal setting, strategy selection, and self-regulation, rather than as a simple direct effect.

4. Comparative Analysis of International Research Findings

The relationship between growth mindset and academic achievement is a widely discussed topic in contemporary educational psychology. Although existing studies offer evidence that this psychological characteristic may positively influence educational outcomes, researchers have reached differing conclusions regarding its effectiveness, magnitude of impact, and generalizability.

For example, D. Yeager and colleagues (2019) investigated a brief online intervention designed to develop growth mindset in a nationwide experiment conducted in schools across the United States. The results indicated that the intervention helped improve grades among students with previously lower academic performance and increased enrollment in advanced mathematics courses.

Importantly, the authors emphasized that the effects of the psychological intervention also depended on the characteristics of the educational environment. In other words, it is important not only to change students' beliefs but also to provide educational conditions that support those psychological changes.

Two meta-analyses conducted by V. Sisk and colleagues (2018) examined this issue on a broader scale. The first included 273 studies and 365,915 participants, while the second covered 43 studies and 57,155 participants.

These meta-analyses found that both the overall association between growth mindset and academic achievement and the average effect of programs aimed at developing growth mindset were weak. At the same time, some analyses suggested that

such programs might be more beneficial for students from disadvantaged socioeconomic backgrounds or those considered academically at risk.

A systematic review and meta-analysis published by B. Macnamara and A. Burgoyne (2023) offered an even more critical assessment of how growth mindset interventions affect academic outcomes.

Examining data from 63 studies involving 97,672 participants, the authors reported a very small overall effect size (d = 0.05), which was no longer statistically significant after adjustments for potential publication bias. The effect estimated from the six studies with the highest methodological quality was also not statistically significant (d = 0.02).

These findings do not amount to a rejection of the concept of growth mindset. Rather, they show that it is difficult to support scientifically the categorical claim that brief interventions based on this theory improve academic achievement in all circumstances.

The comparative analysis of these studies is summarized in the following table.

Study	Main finding	Scientific significance
Blackwell et al., 2007	Growth-oriented beliefs are associated with academic development	Explains motivational mechanisms
Sisk et al., 2018	Overall association and intervention effects are weak	Highlights the need to avoid overstating effects
Yeager et al., 2019	Positive outcomes for some students in certain contexts	Demonstrates the importance of the educational environment
Macnamara & Burgoyne, 2023	Overall effects are not reliably established in high-quality studies	Calls for methodological caution

Taken together, this evidence suggests that growth mindset should not be viewed as an independent and universal cause of academic achievement, but as a factor that may become important under certain psychological, social, and educational conditions.

5. Psychological and Pedagogical Conditions for Developing Growth Mindset in Higher Education Institutions

Applying the principles of growth mindset may offer opportunities to develop students' intellectual potential in higher education. However, this approach should not be limited to encouraging positive thinking or urging students simply to work harder.

First, creating a psychologically safe learning environment is essential. When students make mistakes, the causes of those errors, possible solution strategies, and next steps should be discussed instead of interpreting the mistakes as personal inability. Teachers' attitudes, communication styles, and assessment practices play a particularly important role in this process.

Second, it is advisable to provide constructive, process-oriented feedback. For example, rather than offering a general judgment such as "You are very smart," teachers can offer specific feedback: "You used several approaches to solve this problem; at the next stage, you could analyze the evidence more precisely."

Third, students' metacognitive competencies need to be developed. Metacognition involves awareness, planning, monitoring, and evaluation of one's own cognitive processes. Through this process, students learn to assess what they know, identify gaps in their knowledge, and determine how those gaps can be addressed.

Fourth, reflective teaching and learning techniques are important. Asking students questions at the end of a lesson, such as "What new knowledge did I gain today?", "Which task was difficult for me?", and "Which strategy worked?", may help them evaluate their learning activities more consciously.

Fifth, individual psychological characteristics must be considered. Students differ in motivation, emotional resilience, and academic preparation. Accordingly, activities designed to develop growth mindset should be adapted to students' actual needs and educational circumstances.

6. Scientific and Practical Significance of the Topic for Higher Education in Uzbekistan

Developing independent learning skills, intellectual engagement, professional competencies, and innovative thinking among students is among the pressing priorities of higher education institutions in Uzbekistan.

In addressing these objectives, investigating students' psychological beliefs about knowledge and abilities opens up new opportunities for research.

First-year students, in particular, may encounter challenges related to adapting to a new educational environment, acquiring independent study methods, meeting academic requirements, and realistically assessing their capabilities.

For students in their final years of study, professional competencies, academic performance, labor-market expectations, and perceptions of future professional success become especially important.

From this perspective, promising directions for empirical investigation among students in Uzbekistan include the relationship between mindset and academic motivation; mindset and procrastination; academic self-efficacy and independent learning; and mindset and responses to academic stress.

In such studies, students' field of study, year of study, socioeconomic circumstances, prior academic preparation, and teaching environment should be considered as control variables.

To ensure reliable findings, it is recommended that international psychological scales be adapted to the Uzbek language and cultural context, that their psychometric properties be evaluated, and that academic achievement be measured not only through self-report but also through objective educational outcomes.

This approach would make it possible to explain more precisely the psychological and educational conditions under which growth mindset is associated with academic outcomes among students in Uzbekistan.

DISCUSSION

The scientific studies reviewed indicate that the relationship between growth mindset and academic achievement is not straightforward.

On the one hand, believing that intellectual abilities can be developed may be associated with students' responses to challenges, learning goals, and motivational characteristics.

On the other hand, the influence of this belief on academic outcomes does not manifest uniformly across students or educational contexts. In particular, high-quality methodological studies provide limited evidence of the overall effectiveness of short-term mindset interventions.

Therefore, efforts to develop growth mindset should be considered part of broader measures intended to improve the quality of education.

The theoretical analysis suggests that a student's belief, "I can develop my abilities," does not in itself guarantee academic achievement. Such a belief may have practical significance only when combined with effective learning strategies, teacher support, high-quality educational resources, and genuine opportunities for development.

The principal limitation of this article is its theoretical and analytical nature. No new empirical data were collected, and no statistical relationship was established among students in Uzbekistan's higher education institutions. Consequently, the conclusions presented here require further examination within local student populations.

CONCLUSION

The theoretical and psychological analysis of the relationship between growth mindset and academic achievement leads to the following general conclusions.

1. Growth mindset is a system of psychological beliefs concerning the possibility of developing intellectual abilities and knowledge. It may be associated with students' learning goals, responses to mistakes, and academic motivation.

2. Potential mechanisms associated with academic achievement include self-regulation, constructive reflection, willingness to change learning strategies, overcoming challenges, and academic engagement.

3. International empirical studies suggest that growth mindset may be beneficial for particular groups and under certain educational conditions. Nevertheless, meta-analyses also report that its overall impact on academic outcomes is small or methodologically uncertain.

4. In higher education institutions, the development of this mindset should be integrated with psychological safety, constructive feedback, metacognitive skills, and individualized learning strategies.

5. In the context of higher education in Uzbekistan, investigating the relationship between growth mindset and academic achievement using locally adapted and psychometrically evaluated instruments, objective academic indicators, and longitudinal research designs represents an important direction for future research.

In conclusion, growth mindset can be regarded as a psychological resource that may be relevant to students' academic activities. However, its effectiveness emerges in interaction with the educational environment, personal motivation, learning strategies, and social and pedagogical support.

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