

A Review of Research on Academic Self-Efficacy

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Abstract: *Academic self-efficacy is an individual's subjective assessment of his or her ability and achievement in learning. This paper reviews the current status of academic self-efficacy research. By reviewing the relevant literature at home and abroad, we summarize the definition, structure, measurement tools and research results of academic self-efficacy, and analyze the different characteristics brought about by different ages and genders. In addition, this paper explores the relationship between academic self-efficacy and related concepts such as academic motivation, academic performance, smartphone addiction, academic procrastination, and self-esteem, and discusses the cultivation strategies to improve the level of academic self-efficacy in students. Finally, we summarize the findings and limitations of the study and suggest directions for future research. This review will provide a scientific basis for educational practice and policy development to promote individual academic motivation and achievement levels.*

Keywords: *academic self-efficacy, efficacy, academic achievement*

1. Introduction

In today's educational environment, students' academic development is not only influenced by intellectual factors, but is also closely linked to many elements of their psychological dimension. Among them, academic self-efficacy, as a key psychological variable, has received increasing attention from researchers. Academic self-efficacy, in short, refers to students' subjective evaluation of their ability and confidence in accomplishing academic tasks. It is not only an important part of students' self-perception, but also an important predictor of their motivation, choice of learning strategies, and academic achievement. With the deepening of research in educational psychology, more and more evidence shows that academic self-efficacy plays a crucial role in students' learning process. A student who is confident in his or her ability to learn is more likely to be actively engaged in learning and to show greater resilience and persistence in the face of difficulties and challenges. On the contrary, students with low academic self-efficacy tend to be intimidated by learning and lack the necessary self-confidence and motivation, thus affecting their learning outcomes and overall development. In view of this, a systematic review of research on academic self-efficacy will not only help us to understand more comprehensively its theoretical background, influencing factors and its complex relationship with academic development, but also provide strong theoretical support and empirical evidence for educational practice.

2. Academic self-efficacy

General self-efficacy was originally proposed by American psychologist Bandura in his social cognitive theory. Self-efficacy is an important internal self-influence factor in social cognitive theory, and it refers to a person's judgment of his or her ability to perform a desired task in a given domain ^[1]. Although it is very similar to the concept of self-esteem, self-esteem involves an individual's emotional evaluation of his or her own worth and is not the same as self-efficacy. Academic self-efficacy, on the other hand, is the extension and application of self-efficacy in the field of learning, originating from Bandura's self-efficacy theory, which refers to the subjective judgment and evaluation of learners' ability to give their own ability to the learning tasks they are about to complete or the learning goals they are going to reach. Pajares and Schunk believe that academic self-efficacy actually refers to a certain degree of self-confidence. Academic self-efficacy is a key determinant and predictor of students' academic performance ^[2]. In addition, academic self-efficacy is one of the measures of students' mental health.

In terms of structure, Wang Kairong examined students' self-efficacy from two dimensions: learning ability and learning behavior ^[3]. The dimension of "learning ability" refers to the individual's judgment

and confidence in his/her ability to successfully complete his/her studies, achieve good grades and avoid academic failure; the dimension of "learning behavior" refers to the individual's judgment and confidence in his/her ability to adopt certain learning methods to achieve the learning goals. The dimension of "learning behavior" refers to the individual's judgment and confidence in his/her ability to achieve learning goals by adopting certain learning methods. Jin Yule pointed out that learning efficacy consists of two important dimensions, namely individual self-efficacy and general learning efficacy [4]. Yufang Bian also classified academic self-efficacy as sense of basic competence and sense of control [5]. BlancoVega et al. categorized academic self-efficacy into three dimensions: attention, communication and excellence when they did a related study. Attention is a state of awareness of academic activities, which is the first step in the learning process. Communication is the process of exchanging information between educators and students through a common language or behavioral system. Excellence is the commitment to study diligently and fulfill the requirements of the program [6].

In terms of measurement, tests are the most commonly used method to study academic self-efficacy. Initially, researchers used general self-efficacy scales to measure academic self-efficacy, and the most widely used is the general self-efficacy scale developed by Schwarzer; the more commonly used are the academic self-efficacy questionnaire developed by Wood and Lacke, the motivational and strategies for learning questionnaire developed by Pintrich, the motivational and strategies for learning questionnaire developed by Pintrich, and the academic self-efficacy questionnaire developed by Pintrich, which is the most commonly used. Based on Pintrich and Degroot, Liang Yusong revised the academic self-efficacy questionnaire and divided the questionnaire into two dimensions: learning behavior and learning ability. It is also the most widely used research tool in this research field in China.

3. Research related to academic self-efficacy

3.1. A study of differences by gender and age

A meta-analysis of 187 studies showed that boys' academic self-efficacy was significantly higher than girls' overall. This may be related to the fact that girls' development is prioritized over boys' in terms of psychological maturity, and that girls may experience more worries and negativity in the areas of self-image, academics, and peer interactions. Researchers have also found that this gender difference is domain-specific: females are more confident in language and art, while males are more competent in math, computers, and social sciences [7]. In terms of age, some studies have reported that students' academic self-efficacy in science decreases with age [8], but others have found that gender differences in academic self-efficacy increase with age [7]. In conclusion, studies usually find changes in academic self-efficacy with age. At the junior high school level, significant differences in academic self-efficacy were found among students in different grades. Students in junior grades may have higher academic self-efficacy because they are older, more mentally mature, and have a deeper and more comprehensive understanding of themselves. Whereas, first-year students are still in the process of self-exploration, their self-efficacy may be higher due to the influence of parents' and teachers' help and support. For master's degree students, the higher academic self-efficacy of younger students may be related to the fact that they face lower academic difficulties, have not experienced too many setbacks and failures, and are still in a state of high academic expectations.

3.2. Academic self-efficacy and motivation

One study found a significant positive correlation between academic self-efficacy and academic motivation. This means that when students are confident in their ability to learn, they are more likely to show strong motivation to learn. This relationship was found across multiple disciplines and age levels, suggesting that academic self-efficacy is one of the key factors in stimulating and sustaining academic motivation. Researchers have also explored the specific mechanisms of how academic self-efficacy affects academic motivation. Some studies have pointed out that academic self-efficacy affects motivation through the setting of learning goals, the adoption of learning strategies, and persistence in the face of difficulties. For example, students with high academic self-efficacy are more likely to set challenging learning goals and are able to flexibly utilize a variety of learning strategies to achieve these goals. At the same time, they are also more likely to persevere in the face of learning difficulties, thus showing higher motivation. In addition, studies have also focused on the interaction between academic self-efficacy and motivation. These studies have found that academic self-efficacy and academic motivation can reinforce each other to form a virtuous cycle. Specifically, when students experience success and complete learning tasks, their academic self-efficacy increases, which in turn

enhances their motivation to learn. Conversely, a strong motivation to learn can also motivate students to study harder, thus increasing their academic self-efficacy. However, it is worth mentioning that although there is a significant correlation between academic self-efficacy and learning motivation, this relationship is not absolute. Other factors, such as students' personality traits, family environment, and teachers' teaching styles, may also have an impact on academic self-efficacy and learning motivation. Therefore, in educational practice, teachers need to consider various factors comprehensively and target to improve students' academic self-efficacy and learning motivation.

3.3. Academic self-efficacy and academic performance

Research on the relationship between academic self-efficacy and academic achievement is heavily weighted across the field. It is increasingly recognized that academic self-efficacy plays a crucial role in students' academic achievement. Thus many studies have emphasized the role of academic self-efficacy in influencing academic achievement. Research findings consistently show that the higher the academic self-efficacy, the better the academic achievement. Some researchers have pointed out that effort, deep processing strategies and goal orientation moderated the relationship between academic self-efficacy and academic performance ^[9]. Some researchers have found that students' academic self-efficacy positively affects their engagement in learning, which in turn affects students' academic performance. However, there are some studies that show no significant correlation between academic self-efficacy and academic achievement ^{[10][11]}. This may be due to the age of the subjects in the study, the way academic self-efficacy was measured, and cultural differences. Academic self-efficacy and academic achievement are causally related to each other, with students' academic self-efficacy positively affecting their academic achievement, which in turn further increases their academic self-efficacy ^{[12][13]}. Although the positive correlation between academic self-efficacy and academic achievement has been heavily validated, the interactions between the two and the path of the relationship still need to be further discussed.

3.4. Academic self-efficacy and other related factors

In addition to the above factors, in recent years, studies have shown that academic self-efficacy is also related to smartphone addiction, academic procrastination, and self-esteem. Some studies have now begun to examine the relationship between smartphone addiction and academic self-efficacy ^{[14][15]}. Their findings suggest that smartphone dependence is a good predictor of academic self-efficacy in secondary school students. Many studies have shown that academic self-efficacy is negatively related to academic procrastination. For example, Hen (2014) investigated academic self-efficacy and academic procrastination in 287 college students and found that there was a negative correlation between these two variables ^[16]. Wu's (2017) study also showed that there was a correlation between college students' academic self-efficacy and academic procrastination even after controlling for the three variables of gender, GPA, and academic level ^[17]. It is worth noting that the relationship between academic self-efficacy and academic delay is not always negative. For example, Kandemir (2014) found a positive correlation between these two variables ^[18]. This may be due to the fact that excessive levels of academic self-efficacy may reduce subjects' sensitivity to task delays, which can lead to academic procrastination. According to Parker et al.'s proactive motivation model, self-esteem may be one of the determinants of academic self-efficacy. Self-esteem as an individual's perception of himself or herself can increase an individual's initiative to learn thus influencing an individual's academic self-efficacy.

4. Academic self-efficacy development and intervention

4.1. Methods of developing academic self-efficacy

Successful experience method: By allowing students to experience successful learning experiences, their recognition of and confidence in their own learning abilities will be enhanced. Teachers can set appropriate learning tasks according to the actual situation of students, so that students can experience success in the process of completing the tasks, thus enhancing their sense of academic self-efficacy.

Alternative experience method: By observing the successful learning experiences of others, students believe that they can achieve similar success. Teachers can guide students to observe and learn from the learning methods and attitudes of the best students around them, thus stimulating students' academic self-efficacy.

Verbal Persuasion: Through positive verbal feedback and encouragement, students' self-confidence and learning motivation are enhanced. Teachers should give students positive comments and affirmations in a timely manner to help students build a positive self-image and improve their academic self-efficacy.

Emotional regulation method: Teach students how to regulate their emotions and face learning challenges with a positive mindset. Teachers can help students learn to manage their emotions through emotional education and psychological counseling to maintain a high sense of academic self-efficacy.

4.2. Intervention Strategies for Academic Self-Efficacy

Individualized Instructional Interventions: Individualized instructional programs are developed based on students' individual characteristics and learning needs. By meeting students' learning needs, students' interest and motivation in learning are stimulated, which in turn improves students' academic self-efficacy.

Cooperative Learning Intervention: Promote communication and cooperation among students through cooperative group learning. Cooperative learning not only improves students' academic performance, but also develops students' teamwork and social skills, thus enhancing their academic self-efficacy.

Goal Setting and Feedback Intervention: Students are guided to set clear and achievable learning goals and are given regular feedback. Through goal setting and achievement, students can clearly see their progress and accomplishments, thus enhancing their sense of academic self-efficacy.

Psychological Counseling and Consultation Intervention: Provide specialized psychological counseling and consultation services for students with low academic self-efficacy. Through professional psychological counseling, we help students solve their learning problems, rebuild their confidence in learning, and enhance their academic self-efficacy.

5. Summary

Academic self-efficacy has been one of the research hotspots in the field of educational psychology over the past decades. However, although some important research results have been achieved, there are still some limitations and need to be further explored and improved. First, academic self-efficacy research in the early years was mainly focused on Western countries, especially the United States. The problem of cross-cultural differences being ignored or underestimated still exists. Students in different cultures may perceive academic self-efficacy in different ways and manifestations. Therefore, future research should strengthen the comparison and analysis of academic self-efficacy in different cultural contexts. Second, most of the existing studies on academic self-efficacy have utilized cross-sectional designs, ignoring changes in the time dimension. However, individuals may experience fluctuations and changes in academic self-efficacy at different stages and environments. Therefore, longitudinal tracking studies on long-term developmental trajectories, individual differences, and influencing factors should be strengthened in the future. In addition, academic self-efficacy research currently focuses on internal individual factors and ignores the influence of the external environment. In fact, external factors such as social support, teacher behavior, and family background also play an important role in the formation and development of academic self-efficacy. Therefore, in the future, it is necessary to comprehensively consider the internal individual factors and external environmental factors to explore the interaction between the two. Finally, when measuring academic self-efficacy, existing studies have mainly used the questionnaire method. However, this method is susceptible to issues such as memory bias and response preferences. In the future, multiple methods such as laboratory observation, interviews and behavioral tasks can be combined to obtain more comprehensive and accurate data. In conclusion, academic self-efficacy research still has some limitations while making some progress. Future research should enhance cross-cultural comparisons, longitudinal tracking, comprehensive consideration of internal and external factors, and the application of diverse measurement methods to promote a deeper understanding of academic self-efficacy.

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