

Relationship between Academic Self-Efficacy and Test Anxiety in Middle School Students

Han Yun^{1*} and Jiahui Wang²

¹ RDFZ Xishan School, Beijing, China

² International Division of Linyi No.4 High School, Linyi, China

* Corresponding Author Email: yun15210770974@outlook.com

Abstract. The period of middle school is not only a stage of academic advancement but also a crucial phase for the overall development of adolescents. In recent years, the academic stress on middle school students has been on the rise, and the increasing levels of test anxiety and academic pressure have led to psychological issues among this group. This paper employs a literature review approach to retrospectively analyze a series of empirical studies exploring the relationship between academic self-efficacy and exam anxiety in middle school students. By comparing the research findings, it delves into the correlation between academic self-efficacy and exam anxiety, providing a foundation and reference for future research on test anxiety. Research conclusions: (1) Academic self-efficacy in middle school students can negatively predict test anxiety; (2) External factors significantly influencing academic self-efficacy in middle school students include teacher expectations and teacher-student relationships. To alleviate test anxiety among middle school students, positive expressions of teacher expectations for student exam performance are recommended. It is also suggested to increase positive evaluations from teachers and peers after completing learning tasks.

Keywords: Middle school students; academic self-efficacy; test anxiety.

1. Introduction

In recent years, students' test anxiety has become increasingly severe, especially for middle school students facing multiple competitive examinations. Escalating test anxiety often leads to significant psychological problems among students. The primary determinants influencing test anxiety and strategies for alleviating it are what many people study now. The impact of both internal and external factors on the level of examination stress in middle school students has been extensively documented by numerous studies. Notably, the academic self-efficacy of middle school students plays a pivotal role in influencing test anxiety. This paper employs a literature review methodology to retrospectively analyze a series of empirical studies on the correlation between academic self-efficacy and examination nervousness among middle school students. It compares research findings in this area and further explores the correlation between academic self-efficacy and examination anxiousness, providing a reference for future investigations into test anxiety.

Moreover, the factors influencing middle school students' level of test anxiety are considered. This review focuses on middle school students and aims to alleviate their test anxiety by summarizing and analyzing the effects of academic self-efficacy on examination anxiousness. This article thoroughly summarizes the impact of academic self-efficacy on examination stress among middle school students. It contributes to driving further research on effectively mitigating test anxiety and academic pressure, paving the way for future intervention experiments. In response to the current research on this topic, we suggest enhancing positive expressions of teacher expectations for student exam performance and increasing positive evaluations from teachers and peers after completing learning tasks. These methods can effectively address the low academic self-efficacy leading to test anxiety and related psychological issues among middle school students, ultimately contributing to the treatment of psychological disorders in clinical settings.

2. Methodology

Through the investigation of the existing relevant literature in China to obtain information, summarize, analyze, and sort it out, and mainly use the two websites of CNKI and Wanfang Database to retrieve the literature. The search keywords are middle school students, academic self-efficacy, exam anxiety, and academic mood. The literature used was published after 2000 and contains search keywords. This article organizes and analyzes the literature on the self-efficacy and examination anxiousness of middle school students, attaches importance to tracing back to existing cases, and analyzes and organizes the existing cases.

3. Basic Concepts

3.1. Academic Self-Efficacy

Academic self-efficacy defines people's faith that they can effectively complete specific academic assignments at predetermined levels [1]. Self-efficacy, in Bandura's view, is a crucial component of human agency and a potent tool for shielding people from psychological pressure [2, 3]. Self-efficacy is also shown to be a crucial motivating factor within an applied framework for self-regulated learning, in addition to serving as a core mechanism for explaining the self-monitoring processes defined by Social Cognitive Theory [4]. In an academic setting, SE is commonly discussed in terms of academic self-efficacy, which refers to student assessments of their capacity to accomplish educational objectives [4]. For the purpose of evaluating their self-efficacy, participants accumulate data regarding their actual performances, vicarious experiences, persuasion, and their physiological reactions [1]. Self-efficacy beliefs drive a variety of task-related behaviors, including decision-making, effort, persistence, resiliency, and accomplishment [1, 2]. Presenting challenges that are comparable to the actual challenges learners have to resolve is the conventional means for judging academic self-efficacy [5]. As an alternative, textual statements of issues or assignments rather than actual issues may be included in academic self-efficacy measures. For instance, "How certain are you that you can accurately spell each phrase in a one-page essay or composition?" "How convinced are you that you can accurately resolve equations with square roots?" or "How convinced are you that you will receive a mathematics grade higher than a B at the end of this term?" [5-7]. Additionally, several studies demonstrate that self-efficacy shapes academic motivation, learning, and accomplishment [1, 6]. It offers a distinct self-evaluative dimension that determines perceived self-efficacy, which can be excellent or inadequate [8]. It has been demonstrated that individual distinctions in perceived self-efficacy are more potent indicators of one's accomplishments than previous success or capacity, and they seem to be particularly pertinent as individuals are experiencing adversity [8].

3.2. Test anxiety

Since examinations have been utilized to assess performance, the phenomenon of anxiousness about tests has undoubtedly existed [9]. Test anxiety reached the stage of academic research under its own proper term in 1952 when Mandler and Sarason presented an assortment of research papers on exam anxiousness and the ways it connects to effectiveness, even though the initial research related to examination anxiety was carried out as early as 1914 [10]. A few years later, the Test Anxiety Scale for Children was established for gauging test anxiety in children. Additionally, presented researchers with a method to evaluate individual variations in examination anxiety in adults, the Test Anxiety Questionnaire [11]. It has been widely believed that exam stress consists of two components, typically described as emotionality and worry, since the early 1970s [11]. Therefore, numerous studies on nervousness about exams have concentrated on improving testing stress measurements and identifying the unique effects of the two elements [12, 13]. Since behavior modification strategies only diminished stress about tests when the emotionality component was tackled, Hembree hypothesized that test anxiety was essentially a behavioral issue [14]. This view proposes that the

student experiences cognitive signs of exam anxiety (e.g., worry) after recognizing increased levels of physiological arousal [15]. According to research examined over the past 40 years, nerves about exams corresponds to multiple types of maladaptive behaviors, which includes perfectionism, fear of receiving a low score, ineffective study skills and poor learning abilities [16]. Multiple academic levels, including elementary, junior high, and high school, have been the subject of test anxiety study [17]. This study mainly discusses the exam anxiety of middle school students because test anxiety commonly occurs among student populations. It encompasses feelings of tension, unease, worry, and fear during the entire process of exams, including before, during, and after the exam results are announced, along with other associated physical and mental symptoms [18]. A stable propensity to experience anxious moods underlies numerous distinct anxieties, which is generally reflected in the personality trait of neuroticism [18]. It is widely observed that the concern aspect of test anxiety is detrimental to performance, particularly academic accomplishment [19].

3.3. Control-Value Theory

The nomological network of emotions in academic settings is an essential focus of contemporary educational psychology, and the control-value theory is a key theory in this field [20]. Xu proposed that students' assessment of control and value in learning tasks influences their academic emotions [21]. Pekrun introduced the control-value theory of academic emotions with the core hypothesis that emotions are activated [22]. He argued that personal, task, and contextual elements, as well as evaluation factors, all of which are extremely important to students' academic success (learning outcomes), had an impact on academic emotions. According to the control-value hypothesis, distinct evaluation antecedents shape activity emotions, activity feelings, and projected result emotions. The object emphasis and time limits of these emotional groups vary, making it possible for assessments of control and values to serve various purposes. Value (perceived significance of acts and results) and subjective control (beliefs about how successful the self may be in creating desirable and averting unwanted consequences) are the main precursors of accomplishment sensations, based on Pekrun's theory of accomplishment sentiments [22, 23]. Therefore, the particular mix of students' assessments of their control and values forecasts their feelings. Students' emotions therefore affect their enthusiasm, learning methods, and cognitive capabilities, which eventually impact their academic achievement [23]. The term "appraisal of control" pertains to the manner in which somebody believes they are able to exert influence over goals-relevant acts as well as how feasible they are to accomplish certain results [24]. Value is evaluated in terms of perceived importance, relevance, and significance of behaviors and results [22, 24]. The theory defines intrinsic and extrinsic (attainment) value assessments as the two main categories of value evaluations. Independent of their instrumental utility, intrinsic value evaluation is the estimation of the value of accomplishment actions and results per se. Extrinsic value evaluation, on the other hand, focuses on recognizing the value that actions and results are in achieving other important objectives. [24].

4. Relationship between Academic Self-Efficacy and Test Anxiety

During the process of reviewing and analyzing previous research reports, we found that most of the literature's findings suggest a substantial inverse connection between exam anxiety and academic self-efficacy. According to Bandura, a primary cause of anxiety is not the threatening event itself but rather the lack of self-efficacy to handle it [2]. Therefore, individuals with high self-efficacy experience lower anxiety levels when facing exams. The results of Tang's group counseling intervention experiment revealed that out of the total 338 subjects who are all middle school students, 52 individuals exhibited high levels of academic self-efficacy, accounting for 15.38% of the sample size [25]. Additionally, there were 46 subjects with low academic self-efficacy (13.61% of the total), while a majority of 240 subjects demonstrated moderate levels (71.01%). In terms of test anxiety, there were 81 students with low levels (23.96%), followed by 116 students with intermediate levels (34.32%), and finally, 139 students experiencing high test anxiety (41.12%) [25]. Consequently, a

significant proportion consisting of up to 255 individuals from this sample displayed intermediate or higher levels of test anxiety, representing approximately 75.44%.[11] The above findings reinforce the hypothesis that academic self-efficacy is a substantial adverse determinant of exam anxiety. [25]. Self-efficacy is the degree of confidence presented by a person in behavioral responsibilities. A lower risk of anxiety results from increased self-efficacy, which boosts confidence in accomplishing goals via effort. Through the influence of individuals' self-efficacy, it is possible to predict their anxiety levels [26].

Barrows et al.'s experiments also demonstrated a substantial inverse connection between academic self-efficacy and exam anxiousness [27]. The Motivated Strategies for Learning Questionnaire (MSLQ), which was utilized as both the pre- and post-questionnaire by the investigators, was a questionnaire that has previously been validated [27]. 13 items total, divided into two sections—one evaluating exam anxiety and the other self-efficacy—made up the questionnaire. Each participant received a pre- and post-questionnaire separately during class. The outcomes of the present research supported those of earlier research that shown a substantial connection between self-efficacy and exam anxiety [27].

The Academic Self-efficacy Questionnaire, the Meaning in Life Questionnaire, and the Test Anxiety Scale were employed for interviewing an aggregate of 2231 higher vocational students from Shandong Province in Jia et al.'s quantitative investigation. They found that the direct effect of academic self-efficacy on exam anxiousness was not significant; Academic self-efficacy positively foretold the sense of purpose in life and adversely anticipated fear of failure. Exam anxiety was inversely correlated with meaning of life; Fear of failure had an adverse connection with sense of purpose in life; the fear of failing is a strong indicator of anxiousness about exams. According to the findings, exam anxiety is impacted by academic self-efficacy not only through a person's feeling of life purpose and fear of failure, but also via an interaction of these aspects [28].

5. Implications and Conclusion

Academic self-efficacy in middle school students can negatively predict exam anxiety. Predictive role of academic self-efficacy in exam anxiousness: Academic self-efficacy represents a person's confidence demonstrated in behavioral activities. Higher self-efficacy improves belief in dedication to achieve goals, which decreases the risk of suffering nervousness. External factors significantly influencing academic self-efficacy in middle school students include teacher expectations and teacher-student relationships.

To alleviate test anxiety among middle school students, we propose strategies that focus on external factors to enhance academic self-efficacy. This paper summarizes the following strategies: Firstly, we recommend emphasizing positive expressions of teacher expectations for student exam performance. De Boer et al.'s meta-analysis pointed out that after perceiving teacher expectations, students develop expectations and motivation, investing time and effort into completing learning tasks [29]. This leads to more opportunities to experience the joy of success and construct academic self-efficacy, ultimately alleviating test anxiety.

Secondly, we suggest increasing positive evaluations from teachers and peers after completing learning tasks. Some studies suggest that when students receive positive evaluations from teachers or peers after completing learning tasks, their academic self-efficacy not only develops in that particular task but also improves their learning behavior for future difficult tasks. This further alleviates or eliminates test anxiety.

The strategies proposed in this paper to alleviate test anxiety among middle school students primarily focus on antecedent and outcome factors. However, factors influencing academic self-efficacy and test anxiety also include process factors such as indirect experiences of others during the learning process, teacher-student relationships, and academic emotions. We hope that future researchers in this field can study and propose corresponding strategies for these factors.

References

- [1] Schunk, D. H., & Pajares, F. The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15–31). Academic Press, 2002.
- [2] Bandura, A. Self-Efficacy Conception of Anxiety. *Anxiety Research*, 1988, 1: 77-98.
- [3] Lei, W., Zhang, H., Deng, W., Wang, H., Shao, F., & Hu, W. Academic self-efficacy and test anxiety in high school students: A conditional process model of academic buoyancy and peer support. *School Psychology International*, 2021, 42(6): 616–637.
- [4] Honicke, T., & Broadbent, J. The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, 2016, 17: 63-84.
- [5] Bong, M., & Skaalvik, E. M. Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, 2005, 15(1): 1–40.
- [6] Pajares, F., Miller, M. D., & Johnson, M. J. Gender differences in writing self-beliefs of elementary school students. *Journal of Educational Psychology*, 1999, 91(1): 50–61.
- [7] Zimmerman, B. J., & Bandura, A. Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal*, 1994, 31(4): 845–862.
- [8] Cassidy S. Resilience Building in Students: The Role of Academic Self-Efficacy. *Frontiers in psychology*, 2015, 6: 1781.
- [9] Tryon, G. S. The Measurement and Treatment of Test Anxiety. *Review of Educational Research*, 1980, 50(2): 343–372.
- [10] Sarason, S. B., & Mandler, G. Some correlates of test anxiety. *Journal of Consulting and Clinical Psychology*, 1952, 47: 810-817.
- [11] Stöber, J., & Pekrun, R. Advances in test anxiety research [Editorial]. *Anxiety, Stress & Coping: An International Journal*, 2014, 17(3): 205–211.
- [12] Liebert, R. M., & Morris, L. W. Cognitive and emotional components of test anxiety: A distinction and some initial data. *Psychological Reports*, 1967, 20(3, PT. 1): 975–978.
- [13] Pintado, I. S., Sánchez-Mateos, J. D., & Escolar-Llamazares, M. C. A stress inoculation program to cope with test anxiety: Differential efficacy as a function of worry or emotionality. *Avances en Psicología Latinoamericana*, 2016, 34(1): 3–18.
- [14] Hembree, R. Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 1988, 58(1): 47–77.
- [15] Jerrell C. Cassady and Ronald E. Johnson, *Cognitive Test Anxiety and Academic Performance*, *Contemporary Educational Psychology*, 2002, 27: 270–295.
- [16] Derek D. Szafranski, Terri L. Barrera and Peter J. Norton, *Test anxiety inventory: 30 years later*, *Anxiety, Stress, & Coping*, 2012, 25(6): 677.
- [17] Cheek, J. R., Bradley, L. J., Reynolds, J., & Coy, D. (2002). An intervention for helping elementary students reduce test anxiety. *Professional School Counseling*, 2002, 6(2): 162–164.
- [18] McDonald, A. S. The prevalence and effects of test anxiety in school children. *Educational Psychology*, 2001, 21(1): 89–101.
- [19] Bodas, J., & Ollendick, T. H. Test Anxiety: A Cross-Cultural Perspective. *Clinical Child and Family Psychology Review*, 2005, 8: 65-88.
- [20] Putwain DW, Jansen in de Wal J, van Alphen T. Academic Buoyancy: Overcoming Test Anxiety and Setbacks. *Journal of Intelligence*. 2023; 11(3):42.
- [21] Xu Xiancai, *Research on the Intervention of Group Counseling in High School Students' Academic Emotions: Based on the Control-Value Theory*, 2020, 1.
- [22] Pekrun, R., & Perry, R. P. Control-value theory of achievement emotions. In R. Pekrun & L. Linnenbrink-Garcia (Eds.), *International handbook of emotions in education* (pp. 120–141). Routledge/Taylor & Francis Group, 2014.
- [23] Daniels, L. M., & Stupnisky, R. H. Not that different in theory: Discussing the control-value theory of emotions in online learning environments. *Internet High. Educ.*, 2012, 15: 222-226.

- [24] Pekrun, R. (2006) the Control-Value Theory of Achievement Emotions: Assumptions, Corollaries, and Implications for Educational Research and Practice. *Educational Psychology Review*, 2006, 18: 315-341.
- [25] Tang, S. J. An Intervention experiment of Group Counseling based on Academic Self-efficacy on high school students' test Anxiety, *Educational Research and Experiments*, Second issue 2018: 93.
- [26] Yanhui Mao, Mei Xie, Mengyao Li, Chenxi Gu, Yiping Chen, Zhenyu Zhang & Chuanyu Peng. Promoting academic self-efficacy, positive relationships, and psychological resilience for Chinese university students' life satisfaction, *Educational Psychology*, 2023, 43:1, 78-97.
- [27] Barrows, J., Dunn, S., & Lloyd, C. A. Anxiety, Self-Efficacy, and College Exam Grades. *Universal Journal of Educational Research*, 2013, 1: 204-208.
- [28] Jia, J., Ma, Y., Xu, S., Zheng, J., Ma, X., Zhang, Y., Sun, W., & Liu, L. Effect of Academic Self-Efficacy on Test Anxiety of Higher Vocational College Students: The Chain Mediating Effect. *Psychology research and behavior management*, 2023, 16: 2417–2424.
- [29] De Boer, H., Timmermans, A. C., & van der Werf, M. P. The effects of teacher expectation interventions on teachers' expectations and student achievement: narrative review and meta-analysis. *Educational Research and Evaluation*, 2018, 24: 180 - 200.