

A Review of the Impact of Self-Efficacy and Psychological Resilience on Test Anxiety in Middle School Students

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Abstract. Test anxiety is a common problem among middle school students in the fiercely competitive academic atmosphere created by important exams like the National College Entrance Examination (Gaokao) and the Middle School Entrance Examination (Zhongkao). Test anxiety, as a common negative emotion, significantly affects students' mental health and academic performance in examinations. It is a widespread and profoundly impactful psychological issue. This paper reviews the research literature on the relationship between self-efficacy, psychological resilience, and test anxiety in middle school students. The results indicate that in middle school students, Self-efficacy (SE) is negatively correlated with TA, and Psychological Resilience (PR) is also negatively correlated with Test Anxiety (TA), suggesting they have a mitigating and predictive role in students' TA. Furthermore, there has been limited recent research on the impact of SE and PR on TA among university students, with most studies focusing on the middle school level. Therefore, investigating this impact on university students may become a future research trend.

Keywords: Self-efficacy, Psychological Resilience, Test Anxiety, Middle School Students

1. Introduction

In the highly competitive environment characterized by significant academic pressure from examinations like the Middle School Entrance Examination (Zhongkao) and the National College Entrance Examination (Gaokao), the problem of test anxiety is particularly prevalent among middle school students. Many middle school students experience severe Test Anxiety (TA) before and during examinations. Excessive TA can affect their test performance, distract their attention during exams, and prevent them from performing at their normal level. The resulting sense of disparity and guilt from their scores leads to even greater anxiety in future exams. This may cause some students to develop negative attitudes toward learning, and in more severe cases, to drop out of school. Long-term anxiety can also affect the physical and mental health of middle school students, adversely impacting their adaptability in future life. As a negative influence, excessive TA leads to a decline in academic performance, limits learning opportunities, triggers negative emotional experiences, and severely threatens the psychological and physical health of middle school students [1]. Research indicates that Psychological resilience (PR), as an influential factor, is significantly and negatively correlated with TA. Meanwhile, Self-efficacy (SE), as an internal factor impacting TA, is also significantly and negatively correlated with it, playing a predictive and mitigating role.

In recent years, the impact of SE and PR on TA in secondary school students has received widespread academic attention. Exploring the relationship between these three variables is conducive to revealing the psychological mechanisms of TA and providing a theoretical basis and practical guidance for alleviating student TA.

2. Literature review

2.1. Research background

Examination-oriented education holds a dominant position in China's educational system, and examinations are a frequent part of students' academic lives, leading to varying degrees of TA. One study indicated that among students from the first year of junior high to the third year of senior high, 32% experience severe TA [2]. The challenges and pressures faced by middle school students are increasing. Junior high students are at the first major turning point in their lives; although the reform of the Zhongkao under the "Double Reduction" policy has achieved positive results, the traditional Zhongkao system still exacerbates their TA [3]. As a crucial stage for further education and career choices, senior high school entails even greater pressure. While the "Double Reduction" policy has been fruitful, the phenomenon of chasing high scores and prioritizing university admission rates persists, and TA among senior high students has also been increasing [4]. Against this backdrop, psychological problems among middle school students are gradually increasing, making it particularly important to focus on their TA.

In recent years, many Chinese and international scholars have studied the influencing factors of TA, which are numerous and include SE and PR, two of the more frequently studied factors. SE, first proposed by the scholar Bandura, can be understood as an individual's expectation regarding the outcomes of future events, which consequently influences subsequent actions [5]. Numerous studies on the impact of SE on TA have predominantly focused on academic SE and emotional regulation SE. PR refers to the strength of an individual's ability to cope with stress, demonstrating good emotional regulation when facing high-pressure environments and challenges, thereby completing tasks exceptionally and steadily. Studies have indicated that student PR is negatively correlated with TA. In summary, research on the influence of SE and PR on TA is of great importance and holds significant meaning for how to resolve and alleviate the psychological problem of TA in secondary school students.

2.2. The concept of test anxiety

TA is a common anxiety reaction among students, characterized by worry and fear, and accompanied by defensive and avoidant behaviors. It is triggered by specific examination situations and influenced by an individual's cognitive appraisal abilities, past experiences, personality traits, and other psychophysiological factors, manifesting as a psychological state with varying degrees of emotional responses.

It is widely believed in the research community that a moderate level of TA can have a positive effect on students' academic achievements. However, excessive TA distracts students' attention and not only negatively impacts their performance but also affects the development of their cognitive and emotional psychological qualities. Students with severe TA tend to suffer more from cognitive interferences such as distractibility, disorganized thinking, and impaired problem-solving skills, preventing them from performing at their actual level during exams. In addition to its direct impact on academic performance, TA is closely related to a series of mental health problems. For instance,

it is negatively correlated with SE and PR, and positively correlated with sleep disorders and academic burnout. Prolonged exposure to high-pressure environments and high-anxiety states can not only lead to academic burnout and even avoidance behaviors but will also affect future career choices and overall life adjustment [6]. Therefore, an in-depth study of the causes and influencing factors of TA is of great significance for promoting the all-round development of middle school students.

3. Research review

3.1. The concept of psychological resilience and related research on its impact on test anxiety

3.1.1. The concept of psychological resilience

There is no consensus among Chinese and international scholars on the concept of PR. A synthesis of Chinese and international literature suggests it is mostly defined from three perspectives. The first perspective describes PR as an innate ability to adapt to adversity. The second emphasizes the outcome, where an individual, after suffering adversity, adapts quickly, solves the problem, and achieves a better result than before; it can be seen as a phenomenon of encountering and rapidly adapting to adversity. The third perspective places more emphasis on the process, viewing PR as a dynamic developmental process of psychological adaptation that highlights the interaction between the person and the environment, and the varying manifestations of resilience across different contexts [7].

In summary, PR refers to an individual's capacity to adjust their psychological and emotional state in response to pressure or challenges in different environments, thereby achieving positive psychological or behavioral outcomes. The higher an individual's level of PR, the more stable their performance will be when facing pressures such as examinations.

3.1.2. Related research on the impact of psychological resilience on test anxiety

In most studies, PR serves as a mediating variable between test anxiety and other factors (such as SE, academic stress, emotional intelligence) and is an important means of intervention. Research shows that the overall level of PR among middle school students is moderate to high, with significant differences based on only-child status, grade, gender, and place of household registration. Overall, PR can negatively predict test anxiety, meaning psychological resilience is negatively correlated with TA.

Hu Xiao conducted an experiment using group counseling centered on PR as an intervention method with 60 ninth-grade students. The students were divided into an experimental group (30 students: 24 female, 6 male) and a control group (30 students: 12 female, 18 male). Both groups were tested using the Test Anxiety Scale (TAS) and the Adolescent Psychological Resilience Scale, which revealed that psychological resilience mediates the effect of emotional intelligence on TA and effectively reduces the level of TA in junior middle school students.

The first phase validated the research hypothesis. In the preparatory stage, volunteers were recruited, and students with high levels of TA were selected. The subjects were divided into experimental and control groups and underwent a pre-test. Subsequently, the experimental group received a two-month intervention (8 weeks, once a week, 90 minutes each time), while the control group received no intervention. A post-test was conducted after the intervention, and the collected data were analyzed for pre-test/post-test differences (homogeneity test) using SPSS 26.0. There was

no significant disparity in the pre-test and post-test scores for the control group, but for the experimental group, the pre-test score for PR was lower than the post-test score, and the pre-test score in TA surpassed the post-test score.

In the second phase, based on the literature, Hu Xiao designed a group counseling intervention study centered on PR, focusing on the dimensions of personal strength and support systems, with main contents including positive cognition, interpersonal assistance, and family support. The study was divided into four stages: initial, transition, working, and ending. The experimental group underwent an 8-week intervention with a different theme each week, held every Saturday afternoon from 16:00 to 17:30, while the control group received no intervention. After data collection, SPSS 26.0 was again used to analyze the difference in the gain scores (post-test minus pre-test) for PR and TA between the experimental and control groups. There was a significant difference in the PR gain scores between the two groups ($p=.003, p<.05$), and a significant difference in the TA gain scores ($p=.000, p<.001$), indicating that the intervention centered on PR had a significant effect on alleviating TA [8].

Although the results concluded that PR helps alleviate TA, the study has significant limitations. First, the intervention was only applied to the students, without intervening with other factors that influence TA, such as parents. Second, the sample size was too small to be representative of all middle school students in China.

Yang Maoyun conducted a study on the relationship among academic stress, PR, and TA in senior high school students. A random sample was drawn from four high schools in Guizhou Province, with 1,150 questionnaires distributed and 1,066 valid questionnaires returned. First, a difference analysis was conducted on the levels of TA and PR based on gender, only-child status, grade, and student cadre status. It was found that these factors had little impact on PR, but the level of TA was generally high, with no significant differences among the different groups. Then, a correlation analysis was performed on PR, academic stress, and TA. The correlation coefficients between senior high school students' academic stress and PR and its various dimensions were $-.173, .032, -.327, .032, -.122$, and $-.090$, respectively. Among senior high school students, a significant negative correlation was found between academic stress and PR—including its sub-dimensions of emotional control, family support, and interpersonal assistance. The correlation coefficients between senior high school students' TA and PR and its various dimensions were $-.373, -.140, -.439, -.075, -.159$, and $-.260$, respectively, which shows a significant negative relationship between TA and PR and its dimensions, all highly consistent with the hypotheses [9].

Finally, a stepwise multiple regression analysis was used to analyze the three variables, with TA as the dependent variable and academic stress and PR as independent variables. Following this, a stepwise regression analysis was conducted on the various dimensions of PR with TA and academic stress. The experimental data showed that when PR was added to the regression equation of the influence of academic stress on TA, TA showed a significant downward trend. It can be concluded that PR is negatively correlated with TA. However, the study still has shortcomings, as the subjects were mainly from rural areas, which limits the generalizability of the finds.

3.2. The concept of self-efficacy and related research on its impact on test anxiety

Regarding the concept of SE, it can be understood as an individual's expectation of the outcomes of future events, which in turn influences subsequent actions. It was first proposed by the scholar Bandura, and scholars such as Anna Maier et al. have pointed out that students with low SE are especially vulnerable to test anxiety. As scholars have delved deeper, SE has been divided into specific self-efficacy and general SE. As this paper is a review of research on the impact of SE on

TA, and most research focuses on the impact of specific SE(emotional regulation SE, academic SE), the definition of SE in this paper is specific SE.

Emotional management SE denotes an individual's perceived degree and level of their own emotional regulation, i.e., the student's confidence in regulating their emotions through their own efforts. Wang Gong, Zhang Qingqing, and Huang Pilan's research on the effect of emotional SE on TA concluded that emotional regulation SE has a negative predictive effect on TA, and enhancing emotional regulation SE can alleviate TA [10].

Using the Emotional Regulation SE Scale and the TA Scale (TAS), the scholars surveyed 610 junior and senior high school students (484 junior high, 96 senior high; 305 male, 275 female) from a middle school in Guizhou Province. There were 346 Han students and 234 ethnic minority students; 156 urban students and 424 rural students. They conducted a questionnaire survey based on the two dimensions of emotional SE (efficacy for positive emotions, efficacy for managing negative emotions). After data collection, statistical analysis was performed using SPSS Statistics 22.0. First, the overall level of student TA was assessed, with an incidence rate of 36.90% for boys and 32.79% for girls. Then, a correlation analysis between emotional SE and TA was conducted, which found a significant negative correlation, meaning the higher the emotional regulation self-efficacy of middle school students, the lower their level of TA. To ensure the influence of gender, an independent samples t-test was conducted on TA across different genders. The emotional SE of male middle school students ($n=305$, $M=54.74$, $SD=10.32$) was significantly lower than that of female students ($n=275$, $M=52.83$, $SD=10.79$), with $t(578)=2.18$, $p<.05$. The TA of male middle school students ($n=305$, $M=16.89$, $SD=7.21$) was significantly lower than that of female students ($n=275$, $M=18.23$, $SD=7.38$), with $t(578)=-2.22$, $p<.05$.

Academic SE refers to students' confidence when facing academic difficulties and their ability to find suitable solutions and learning methods, i.e., a student's self-evaluation and judgment of their academic abilities.

Scholar Cui Kaiwen took students from a junior middle school in Guilin as research subjects and introduced fear of negative evaluation and core self-evaluation into the study of the effect of academic self-efficacy on TA. It was found that fear of negative evaluation and core self-evaluation each had a partial intermediary role in the relationship between academic SE and TA. Furthermore, academic SE, TA, fear of negative evaluation, and core self-evaluation were all significantly correlated with each other, and improving academic SE can significantly reduce TA [11].

Cui Kaiwen used a questionnaire survey method, employing the TA Scale, the Academic SE Questionnaire, the Fear of Negative Evaluation Scale, and the Core Self-Evaluation Scale. Six classes were randomly selected from each of the three grades of junior high school, and after eliminating invalid data, the data were entered into SPSS 25.0. The data were subjected to descriptive statistics, reliability testing, correlation, and group comparison analyses. In the correlation analysis, academic SE was significantly negatively correlated with TA ($r=-0.329$, $p<.01$). The difference test examined the roles of fear of negative evaluation and core self-evaluation as part of the relationship between academic SE and RA. Ultimately, it was concluded that academic SE had a significant predictive impact on TA ($\beta=-0.0899$, $t=-9.3561$, $p<.01$). When the intermediary variable of fear of negative evaluation was taken into account, the predictive impact of academic SE on TA was still notable($\beta=-0.0586$, $t=-6.8252$, $p<.01$). However, when the mediating variable of core self-evaluation was included, the predictive effect of academic SE on TA was not notable ($\beta=-0.0095$, $t=-1.1216$, $p>.05$).

In conclusion, SE has an inhibitory effect on TA.

4. Discussion

The aforementioned studies indicate that SE and PR do not function independently; they influence and promote each other, jointly affecting TA. When an individual possesses both high SE and high PR, the buffering effect on TA is more substantial. For example, high SE makes students confident about exams, while high PR helps them quickly adjust their mindset when encountering difficulties or setbacks in exams. Their synergistic effect can more effectively alleviate TA. Research has found that when facing difficult exams, the TA level of student groups with high SE and high PR is significantly lower than that of other types of student groups, such as those with low SE and low PR. Furthermore, SE and PR may also influence test anxiety through mutual enhancement; high SE helps individuals strengthen their PR when facing stress, and high PR, in turn, further enhances an individual's SE, forming a virtuous cycle that better defends against TA.

5. Conclusion

First, current research on self-efficacy, psychological resilience, and test anxiety predominantly uses cross-sectional study designs, which makes it difficult to reveal the dynamic process of change among the three variables. Future research could adopt longitudinal designs to record the developmental changes in the relationship among the three variables at different stages. Second, there are few studies that investigate self-efficacy, psychological resilience, and test anxiety together as three variables. While some studies exist that treat psychological resilience as a mediator in the effect of self-efficacy on test anxiety, the internal mechanism among the three needs further exploration. Finally, research subjects are predominantly concentrated on primary and middle school students, with relatively fewer studies on university students and other groups (such as adult education students, vocational training learners.). Subsequent research can broaden the scope of research subjects to enhance the generalizability of the findings.

In summary, self-efficacy and psychological resilience have an important impact on test anxiety. The two interactive, and multiple factors play a regulatory role in the process. In-depth research into the relationship among these three variables is of great significance for improving the mental health of middle school students.

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