

Analysis of the relationship between deferred examination and test anxiety among Chinese college students: an empirical study based on South China Normal University

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Abstract. In contemporary Chinese society, there is generally greater academic stress and higher levels of test anxiety among college students. Some studies have explored the causes and effects of test anxiety. However, seldom scholar has discussed the relationship between deferred examination and test anxiety. This study is aimed to investigate the relationship between deferred examination and test anxiety among Chinese college students. In this study, 113 valid samples were collected through an online questionnaire, and the correlation between deferred examination status and test anxiety was analyzed and discussed by gender. This study used independent samples t-test to discuss the link and $p=0.16$. The results showed that there was no significant correlation between deferred examination and test anxiety, but there were still significant differences in test anxiety scores by gender. It is recommended further research on this area to be go on by gender. This study takes a different perspective to discuss the link between deferred examination and test anxiety among Chinese college students, meanwhile, provides a reference for relevant further research.

Keywords: Test anxiety scale; deferred examination; college student.

1. Introduction

In today's Chinese society, high anxiety and depression levels are common among college students due to high academic stress, based on which a large number of studies have been conducted. Studies of depression levels among college students, especially the relationship between anxiety and depression levels and academic performance, such as cross-sectional and longitudinal testing of depressive symptoms, and intermediary roles of emotion in learning and testing factors, all show the importance of this topic [1, 2].

Most of the related studies focus on how to cope with the anxiety of formal exams, however, deferred examinations (a system where students apply for a postponement of an exam from the university due to special circumstances, such as illness or family emergencies, etc., that prevent them from taking the exam on time, unlike make-up exams) exist in almost all universities in China, and students who take deferred exams undergo the process of studying at home during vacations, and due to the different difficulty of deferred examinations, their state of mind may be markedly different from students participating in normal examinations. Some scholars are aware of this situation. However, empirical research on this specific topic is quite scarce. What are the anxiety levels of students who take deferred exams? How do they differ from students who participate in normal examinations? An exploration of these questions would provide a more complete understanding of test anxiety levels among college students.

This study analyzes the effect of deferred examination on students' test anxiety level based on empirical survey data using TAS (Test Anxiety Scale) at South China Normal University to further improve the research on college students' test anxiety [3].

In this study, the TAS scale was used to quantify students' test anxiety levels, which were combined with students' deferred examination status and analyzed using independent samples t-tests.

2. Literature Review

2.1. Factors Influencing Test Anxiety

The study by Awadalla and other scholars in 2020 investigated the relationship between depression, anxiety and academic performance among 404 students (attrition 66.8%, final effective sample size 134) at a university in the UAE and analyzed the modulating role of gender in it. The study used self-rating scales for anxiety and depressive symptoms, and academic performance was summarized as GPA (0-4), number of absences, and course satisfaction at baseline and in following 6 months. Findings revealed that females generally had higher levels of depression and anxiety than males, and that both anxiety and depression symptoms were associated with lower GPA (GPA=2.67 vs. 2.87 in the depressed group, $p=0.003$; GPA=2.62 vs. 2.86 in the anxious group, $p=0.003$). Baseline depressive symptoms predicted a decrease in GPA after 6 months ($\beta=-0.043$, $p=0.014$), but the correlation weakened after controlling for baseline GPA ($p\leq 0.09$); anxiety symptoms could not predict the result independently. The investigation sheds light on the present study as follows: The association between anxiety and GPA may reflect a direct effect of academic stress itself rather than a modulating effect, meanwhile, female students' academic performance appears to be more susceptible to anxiety levels [4]. Hunt and other scholars investigated the correlation between statistical anxiety and examination performance in a 2023 study of 202 psychology freshmen at a UK university. The study used self-rating scales for measuring statistical anxiety levels and psychometric math ability. The study concluded that anxiety levels, while lowering students' self-expectations, improved exam performance to some extent. This is a result that coincides with Yerkes-Dodson law that moderate anxiety can stimulate optimal performance. Synthesizing this investigation with the findings of Awadalla., it signifies that females score higher in test anxiety and should also achieve higher academic performance. This study also shows this, i.e., females scored significantly higher than males in the freshman year of the university's psychology department ($\beta=-8.64$, $p=0.031$) [5]. According to the Yerkes-Dodson law, it would also be indicated that females should have basically moderate levels of anxiety. Jochmann's study in 2024 surveyed 3,420 German university students, with a final effective sample of 392 and an attrition rate of 88.5%. This survey used a self-report scale and was measured longitudinally by three 6-month intervals. Structural Equation Modeling (SEM) and Autoregressive Time-Lagged Panel Models were used to examine direct and indirect effects between variables, thereby questioning the modulation of stress in the procrastination-health model. This study indicated there was a significant relationship between procrastination behavior and test anxiety and depressive symptoms, while stress does not play a modulating role. This investigation inspired the present study to directly correlate procrastination-related deferred examination behavior to test anxiety without the modulating effect of stress [6]. All of the above investigations have studied the relationship between test anxiety and academic performance from different perspectives, providing a strong theoretical basis for the present study.

2.2. Effects of Deferred Examination on Students

Yang and other Chinese scholars believe that college students are in a psychologically sensitive stage and are prone to a surge of pressure during preparation for exams, but mental health education in colleges and universities generally get a low level of attention and insufficient resources. The survey used a self-assessment scale of mental health symptoms to assess the mental health status of 112 college students in five sessions in 2020 when there were 50, 40, 30, 20, and 10 days before the exam. The analysis revealed that the SCL-90 total score, positive symptom scores (anxiety, depression, etc.), and negative symptom scores (social withdrawal, etc.) varied flatly from 50 to 30 days prior to the exam, whereas by the 30th day prior to the exam, a significant increase in the SCL-90 total score and positive symptom scores was noted (which may be related to the growth of anxiety), and a decline in the negative symptom scores occurred (which may be related to the decrease in socialization due to preparation for the exam). It can be seen that the highest level of anxiety was found 30 days before the test [7]. Furthermore, Daumiller and other scholars in their 2024 study intensively followed 201 German undergraduate students in psychology and economics for 5 weeks and 1 week prior to exams.

Using an experience sampling method (ESM), the study randomly administered questionnaires six times daily to assess six emotions (joy, pride, hope, contentment, anxiety, anger, boredom) and eight adjustment strategy (social support, rumination, expression, etc.), and collected 2, 577 evaluations 5 weeks prior to the exams, and 4, 338 evaluations 1 week prior, totally 6, 915 evaluations. The study analyzed the collected data by modeling three types of dynamic networks: Between-Persons Network, Contemporaneous Within-Person Network and Temporal Lagged Within-Person Network. This study found that density of the network was higher 1 week before the exam, i.e., relationships and emotions change faster and more precariously. Moreover, the time lag effect was more obvious, which was manifested in the more frequent and complex use of adjustment strategies. Meanwhile, the temporal stability of negative emotions such as anxiety was higher than that of positive emotions, and the individual stability of strategies such as rumination was higher. The rumination strategy is characterized one's repeatedly and passively thinking about negative emotions rather than taking actual action to solve the problem. This mode of thinking is often accompanied by excessive attention to one's own emotional state, which can easily lead to the recurrence of anxiety. In this study, students taking deferred exams have longer preparation cycles than normal students, and the frequency of rumination should be higher for students with worse adjustment skills, which may lead to a higher average anxiety level in deferred examiners than in normal students [8]. Ahmad, I., Gul, R and other scholars mentioned that some anxious students would question their teachers a lot and spend more time answering the questions to get the desired answers. Or even getting sick and asking for postponement of exams [9]. Deferred examination is used as a means of relieving examination anxiety with temporary avoidance of examination. It can be seen that the relationship between examination anxiety and deferred examination behavior should not be a simple causal relationship, but a mutual influence and inducement. Therefore, it seems more appropriate to conduct correlation analysis when studying the relationship between the two.

In summary, it can be seen that there may be a certain direct correlation between test anxiety and academic performance, rather than stress mediating the relationship completely between the two, meanwhile, this effect is more significant among female students. At the same time, the closer the exams were, the more severe the students' test anxiety appeared to be, especially in the month before the exams or the week before the exams, when there were significant surges of anxiety in both time periods. With the surge in anxiety, in order to alleviate and escape from the situation, the chances of students applying for deferred examination increase significantly. However, there are some limitations to these studies, such as homogenous sample types limited to a particular school or district, a short time span of one year or only a few months, and significant sample attrition. Subsequent studies can be improved from these perspectives. Considering that there are fewer studies on the direct relationship between college students' deferred examination and test anxiety at the present time, the present study will conduct a cross-sectional investigation on the relationship between college students' deferred examination and test anxiety from this perspective and make an analysis with the data.

3. Materials and Methods

3.1. Test Anxiety Scale

In this study, the Test Anxiety Scale developed by Irwin G. Sarason in 1978 was used to survey students from several colleges of South China Normal University, and 113 valid questionnaires were eventually obtained. The reliability of this questionnaire has been tested by Wang Caikang in 2001, the retest $r=0.62$, $p<0.001$, Cronbach's alpha coefficient is 0.64, and the folded reliability of TAS is 0.60, which proves that the Chinese version of this questionnaire still has high reliability and validity [3].

3.2. Statistical Methods

The t-test is more common in analysis of psychology questionnaires, but there is no relevant literature on TAS. T-test is divided into single-sample t-test, paired-sample t-test, and independent-sample t-test. This experiment investigates the relationship between the dichotomous variable (whether or not to deferred examination) and the continuous variable (TAS score), and the independent sample t-test method can be used.

3.3. Use of Software

This experiment uses SPSS software for data analysis.

4. Result

Table 1. The independent samples test results of the impact of deferred exams on TAS scores

		Levine's test of variance equivalence		Mean equivalence t-test						
		F	significance	t	degrees of freedom	Sig.(two-tailed test)	mean difference	standard error margin	Difference 95% confidence interval	
									lower limit	Upper limit
TAS score	Assuming equal variance	.032	.858	1.416	112	.160	2.31968	1.63808	-.92596	5.56531
	Not assuming equal variance			1.400	47.541	.168	2.31968	1.65678	1.01234	5.65169

The p-value in the data was greater than 0.05, so there was no significant difference between the TAS scores of the deferred examination and examination groups (See Table 1).

The author also analyzed deferred examinations for both males and females no significant differences were found in test anxiety scores (See Table 2 & 3). The following are the results of the analysis for the female sample:

Table 2. The independent samples test results of the impact of deferred exams on TAS scores among females

		Levine's test of variance equivalence		Mean equivalence t-test						
		F	significance	t	degrees of freedom	Sig.(two-tailed test)	mean difference	standard error margin	Difference 95% confidence interval	
									lower limit	Upper limit
TAS score	Assuming equal variance	.718	.400	1.797	58	.078	3.67779	2.04709	-.41990	7.77548
	Not assuming equal variance			1.885	39.662	.067	3.67779	1.95121	-.26679	7.62238

And the following are the results of the analysis for the male sample:

Table 3. The independent samples test results of the impact of deferred exams on TAS scores among males

		Levine's test of variance equivalence		Mean equivalence t-test						
		F	significance	t	degrees of freedom	Sig.(two-tailed test)	mean difference	standard error margin	Difference 95% confidence interval	
									lower limit	Upper limit
TAS score	Assuming equal variance	1.744	.193	-.022	51	.983	-.06047	2.74631	-5.57391	5.45298
	Not assuming equal variance			-.019	11.610	.985	-.06047	3.23501	-7.13532	7.01439

However, a significant difference was found by analyzing the difference in TAS scores between the two sexes (See Table 4):

Table 4. The independent samples test results of the impact of sexes on TAS scores

		Levine's test of variance equivalence		Mean equivalence t-test						
		F	significance	t	degrees of freedom	Sig.(two-tailed test)	mean difference	standard error margin	Difference 95% confidence interval	
									lower limit	Upper limit
TAS score	Assuming equal variance	123.624	.000	-19.463	112	.000	-19.93519	1.02425	-21.96460	-17.90577
	Not assuming equal variance			-20.519	59.357	.000	-19.93519	.97153	-21.87898	-17.99139

Through the questionnaire survey of deferred examination and test anxiety among the students of South China Normal University, the data were subjected to independent samples t-test, and the data showed that the p-value was greater than 0.05, that is, there was no significant correlation between deferred examination and test anxiety, but there was a significant difference between the scores of males and females on the TAS.

5. Discussion

Through questionnaire statistics of 113 students in South China Normal University and independent samples t-test by gender, the author found that deferred examination was not significantly correlated with test anxiety regardless of gender. However, after the test, the author found that there was a significant difference between male and female scores on the TAS, i.e., women's test anxiety levels are generally higher than men's, and this result is consistent with the results of previous studies.

Almutairi et al. used the TAI scale in their study to obtain significantly higher levels of test anxiety in females than in males [10], which is consistent with the present study, and this further illustrates the reliability of the TAS scale in the measurement of test anxiety; no deep correlation analysis was carried out in the report of Zhuang et al. in which they concluded that there was a relationship between deferred examination and test anxiety by only calculating the percentage of anxious students among deferred examiners [11]. From this, it can be seen that there was a certain degree of subjectivity in the results, comparing with the results of the data from this experiment. As to why deferred examination and examination anxiety did not show significant correlation, the author has the following speculations:

(1) Given that the questionnaires were collected online, the author has limited knowledge of the subjects, i.e., other circumstances of the subjects at the time of the test are not known in this study. So, the subjects may have been affected by other factors leading to changes in anxiety levels. In addition, the study did not focus on more individual differences, which may also have an impact on the results.

(2) Limitations of causal inference methods. The deferred examination behavior itself may have a reverse effect on anxiety levels, so a more rigorous longitudinal follow-up design (e.g., repeated measures at intervals of more than three months) should be used to analyze the possible indirect effects among variables.

(3) The Chinese version of the TAS questionnaire is based on a normative sample that is approximately twice as large as the subjects in this experiment, which may not be applicable to this scale which is a small sample, and data analysis based on this scale may lack reliability.

Although deferred examination and test anxiety do not show a direct relationship in the college student population, there are still some differences between men and women in this effect, and future research can further explore this question by gender, and the following suggests several possible future research directions:

(1) The next research can further explore the topic of deferred examination by gender. This study concludes that there is some degree of difference between men and women in deferred examination situations, and in addition to test anxiety, future research could also examine the deferred examination situations of both genders in other terms such as self-efficacy.

(2) In addition, the next study can replace other scales to test whether gender moderates the effect of deferred examination on test anxiety. The TAS scale used in this experiment was developed in 1978. Although it is the most widely used scale in the world, it may gradually begin to fail to adapt to the current test anxiety measurement of college students. In the future, replacing the scale with another one or revising this scale should be considered.

(3) Future research could use the Test Anxiety Scale in other areas of analysis. Not only the situation of deferred examination of college students, but also many fields at present, including civil service examination, Graduate school entrance examination, and various other tests for qualifications can be analyzed by using this questionnaire, which is conducive to discovering more practical results.

6. Conclusion

By analyzing the relationship between deferred examination and test anxiety, this study concludes that there is no significant association between the two, but there is a significant difference between the two sexes, i.e., females scored significantly higher than males on the mean score of TAS. This study provides a reference to similar studies by empirically studying students at South China Normal University.

This paper suggests that future studies further expand the sample size and continue to analyze this topic in depth by incorporating gender differences, or change other scales to continue the study.

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