Studying in North America: A Potential Antidote to Test Anxiety in Chinese Students

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Abstract. As a considerable number of Chinese students suffer from test anxiety, we aimed to find a solution to test anxiety in Chinese students. We conducted an empirical study, in which we replicated the experiment in Min et al. (2022)’s study \cite{1}, to examine predictors of test anxiety and whether studying in North America could alleviate test anxiety with \(N = 85\) participants. As predicted, Chinese students studying in North America had less test anxiety than studying in other countries. In addition, older Chinese students were more likely to have high test anxiety.

1. Introduction

Test anxiety in modern society is prevalent in students as long as test performance is highly correlated with future achievement and career \cite{3}. Between 15\% and 30\% of students across studies suffer from test anxiety \cite{11}. Likewise, anxiety symptoms are detected in 9.89\% of Chinese students in Chinese middle and high schools \cite{12}. Because Chinese educational pattern highly values test performance, Chinese students are predominantly exposed to test anxiety and traumatized by test \cite{1}.

Test anxiety is reflected on three dimensions: affective, cognitive and behavioral \cite{8}. When it takes effect on students, they could be overconcerned about negative consequences of untaken future tests \cite{13}. To find a solution to test anxiety in Chinese students, we determined to conduct this study to examine predictors of test anxiety and then gave our suggestions to attenuate test anxiety in Chinese students.

An increasing number of Chinese students choose to study abroad nowadays \cite{2}. This trend is rather conspicuous in China: the number of Chinese students studying abroad reached 608 thousand in 2017 \cite{5}. It stands to reason that there are advantages to study abroad, which entices Chinese students to leave their home country. Considering Chinese students are tremendously afflicted by test anxiety arising from Chinese educational pattern, we preliminarily hypothesized that studying abroad could alleviate test anxiety in Chinese students. Since Min et al. (2022) \cite{1} found that Chinese students studying in the United States had lower test anxiety than those studying in China, we made a final hypothesis that studying in North America lessens test anxiety in Chinese students.

We replicated the experiment in Min et al. (2022)’s study \cite{1} and because of a paucity of data and homogeneity of two studies, we combined data in both studies and ran analyses.

2. Methods

2.1. Participants

In addition to the 44 participants recruited in Min et al.’s (2022) study \cite{1}, we recruited 41 new participants through flyers. Participants in both Min et al.’s (2022) study \cite{1} and the present study were Chinese students from high schools and universities. Participants who studied abroad must have spent at least two years studying in the country, while participants who studied in China must have never studied abroad. They all signed a consent form before participating in the study. For the demographic statistics of participants in each study, see Table 1.

2.2. Instruments and Procedure

<table>
<thead>
<tr>
<th>Table 1. Sample Demographics in Two Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
</tr>
<tr>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Studying abroad</td>
</tr>
</tbody>
</table>

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In North America 24 54.5% 18 43.9%
In Europe 0 0% 8 19.5%
In China 20 45.5% 15 36.6%

Gender
Cisgender men 11 25% 21 51.2%
Cisgender women 33 75% 20 48.8%

Age
16-18 8 18.2% 10 24.4%
19-21 23 52.3% 21 51.2%
22-24 8 18.2% 6 14.6%
25-26 5 11.3% 4 9.8%

Note. Data of participants in two studies were combined in analyses of the present study.

The study was conducted on Zoom. Participants were asked to open their cameras through. Two participants refused to open the camera. Similar to Min et al.’s (2022) study [1], we gave each participant one STAI questionnaire with the Chinese translation [10] including 20 randomized items from Form Y-1 [6] two times to measure state anxiety, when participants were admitted into the meeting and after informing participants of an upcoming test. The items were assessed on a four-point Likert-type scale, spanning from not at all (1) to very much so (4) for negative terms (e.g., I feel tense). The points were reversed coded for positive terms (e.g., I feel calm). We subtracted the first state anxiety from the second to measure test anxiety. Participants were divided into two conditions, test with and without rewards. To illustrate, the experimenter told the participants, in the condition of test with rewards, the winner of the test could get a delicate gift worth 10 dollars; conversely, the experimenter withheld any information about the test from the participants in the condition of test without rewards. The questions in the test paper were all from Chinese middle schools, but the results of their test were excluded from the analyses in this study. Further, each meeting had 6 – 13 participants. For bivariate correlations between independent variables contained in this study, see Table 2.

2.3. Analyses
We aimed to examine the predictors of test anxiety. We first ran four linear regression analyses to measure how each independent variable independently predicted test anxiety. Then we drew on multiple regression to assess how studying abroad and forms of test (i.e., with or without rewards) simultaneously predicted test anxiety with and without demographic variables – gender and age. In our regression analyses, continuous predictors were mean-centered and categorical predictors were effect coded as -1 and 1, except for studying abroad (studying in North America was coded as 1, Europe as 0, and China as -1).

3. Results

Table 2. Bivariate Correlations Between Independent Variables

<table>
<thead>
<tr>
<th>Higher Values Represent …</th>
<th>Forms of Test</th>
<th>Studying Abroad</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With Rewards</td>
<td>Studying in North America</td>
<td>Female</td>
</tr>
<tr>
<td>Studying Abroad</td>
<td>.059</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.167</td>
<td>-.163</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.008</td>
<td>-.111</td>
<td>-.032</td>
</tr>
</tbody>
</table>

Note. There is no correlation between any two independent variables (i.e., all p > .05).
**Figure 1. Simple Linear Regression Predicting Test Anxiety**

*Note.* Predictor age in the left row ($M = 20.5, SD = 2.51$) and response variable test anxiety in the column ($M = 2.06, SD = 10.9$) were mean-centered. Predictor studying abroad in the right row ($SD = 0.95$) was jittered (i.e., we added subtle random noise to it). Measures of age and studying abroad significantly predicted test anxiety, $B = 2.84, SE = 0.36, t(83) = 7.91, p < .001$ and $B = -3.54, SE = 1.19, t(83) = -2.98, p = .004$, correspondingly. Confidence bands in graphs represented 95% confidence intervals.

**Table 3. Simple Linear Regression of Test Anxiety on 4 Predictors**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Studying Abroad</th>
<th>Forms of Test</th>
<th>Gender</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Anxiety</td>
<td>-.31**</td>
<td>.01</td>
<td>.14</td>
<td>.66***</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01, ***p < .001. Each independent variable independently predicted response variable test anxiety. The coefficients were standardized.

**Table 4. Multiple Regression Predicting Test Anxiety Among Chinese Students, Without (Model 1) and With (Model 2) Demographic Covariates**

<table>
<thead>
<tr>
<th>Test Anxiety</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$ (SE)</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Demographic Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Age</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Studying Abroad</td>
<td>-3.56</td>
<td>-.31</td>
</tr>
<tr>
<td>Forms of Test</td>
<td>0.30</td>
<td>.03</td>
</tr>
</tbody>
</table>
3.1. Simple Linear Regression analyses

In line with our hypothesis, studying abroad significantly predicted test anxiety, $B = -3.54$, $SE = 1.19$, $t(83) = -2.98$, $p = .004$, 95% confidence interval [CI] [-0.52, -0.10] (see Figure 1). That said, Chinese students studying in North America had lower test anxiety compared to their counterparts who studied in China. In addition, forms of test was not a significant predictor of test anxiety, $B = 0.10$, $SE = 1.19$, $t(83) = 0.09$, $p = .930$. The demographic characteristics age significantly predicted test anxiety, $B = 2.84$, $SE = 0.36$, $t(83) = 7.91$, $p < .001$, 95% CI [0.49, 0.82] (see Figure 1). Specifically, older Chinese students were more anxious about test than younger counterparts. However, gender was not significant to independently predict test anxiety, $B = 1.53$, $SE = 1.21$, $t(83) = 1.26$, $p = .211$. For the general results of simple linear regression analyses, see Table 3.

3.2. Multiple Regression Approach

As would be expected, studying abroad consistently predicted test anxiety, whether with or without demographic characteristics, $p = .004$ and $p = .007$, correspondingly. Conversely, forms of test remained insignificant after entering demographic variables into the model, $p = .790$ and $p = .626$, respectively. While gender was not a significant predictor of test anxiety, $p = .119$, age significantly predicted test anxiety after entered into the model, $p < .001$ (see Table 4).

4. Conclusions

Our study supported the hypothesis that Chinese students studying in North America have less test anxiety than studying in other countries. Besides, older Chinese students were more likely to have high test anxiety. The results of forms of test were consistent with those in Min et al. (2022)’s study [1]; in other words, it had no relationship with test anxiety, which could be explained by the unattractiveness of rewards [1].

Paradoxically, much research pointed out that anxiety was universally high among international students in part due to intercultural contact [4][7][9]. It is equivocal to explain why test anxiety is not positively correlated with anxiety, but we reasoned that the educational pattern in China has led to the ceiling of test anxiety in students, which could no longer be higher after studying abroad.

To our knowledge, our study is a pioneer in researching on the influence of studying abroad on test anxiety. Based on our results, we suggested that studying in North America could be a solution to test anxiety in Chinese students.

For the future plan, we would recruit hundreds of participants into the study and take into consideration wealth, self-esteem, self-efficacy, different countries for study, and majors. Concerning forms of test, we might add more rewards or give psychological rewards such as praises. A more sophisticated experiment is considered for use to eliminate confounds and verify whether studying in North America significantly carries weight with test anxiety.

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REFERENCES


