# The Impact Between Self-Control on Academic Performance among Chinese Adolescents

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**Abstract.** Self-control serves as an executive function necessary for individual goal attainment. The aim of this study is to analyze the relationship between self-control ability and academic performance of adolescents in China. Using the questionnaire method, including questions about participants' basic information, their academic performance, and the Self-Control Scale, which can test their self-control ability. We expect that students' academic performance is associated with their self-control ability. The higher students' self-control score is, the higher their self-control ability is, the more excellent their academic performance will be. Moreover, generally, girls' ability for self-control is better than that of boys. Finally, future directions for sampling range and exceptional cases were discussed.

**Keywords:** Self-control; adolescents; academic performance.

## 1. Introduction

The whole human race is living in an attractive world nowadays. Different desires of us are waiting to be fulfilled, and some of them bring back immediate pleasure. Since temptations, desires, and distractions are more disturbing in daily life, self-control ability became a yardstick for various aspects such as job position, academic achievement, and success in life. However, this study mainly focuses on how self-control ability is related to Chinese teenagers' academic performance for Chinese teenagers. Restraining the desire can be an embodiment of self-control. According to Hofmann and Nordgren [1], desire can refer to wishes and wants in a broad definition. To narrow down the definition, appetitive desire is the motivation that pushes us to approach such stimulation in the surroundings and engage in activities with a relative gain in immediate pleasure [1, 2]. Specifically, appetitive desire can also cause many problems. For example, a student is doing homework which is a relatively arduous task, but his or her desire is to unfetter the discomfort and do a relatively relaxed task, say, browsing the space of Instagram.

However, the action of browsing Instagram can give the student immediate pleasure for fulfilling the desire, but doing homework can give a relatively valuable but lengthy pleasure, say, achieving an ideal score in an exam. The willpower to resist the gain of immediate pleasure from the surroundings for having valuable but longer time results is self-control ability. There are two characteristics of self-control ability. Firstly, it should be self-initiated, which means that the external factors that force an individual to inhibit their desire can not be accounted for. Second, self-control ability should only be related to the choice that is more valuable in the long period [3].

In previous studies, because of the inconsistent academic scores, Mischel and other researchers used the Standardized Achievement Score, such as Scholastic Aptitude Test (SAT), to quantify academic achievement. Although the conclusion is that self-control ability-the waiting for delay of gratification in childhood-can predict SAT scores in the high school period [4], it can not represent a holistic view of students' academic performance because it should also include the class participation and homework grade. According to the comparison of Standardized Achievement Tests and Teacher-Assigned Course Grades conducted by Duckworth and Carlson [5], it is indeed more universal for

students in the United States to use SAT to represent their academic performance [6]. However, it is not suitable for international students and Chinese students to use SAT scores because of the different educational systems. Thus, the authors will mainly explore the relationship between self-control ability, represented by scores on the Self-Control Scale, and academic performance, mainly represented by overall appraisals added up of all the subjects that students chose.

The sample selected was described with like how often, when, and how many times. Also, a questionnaire was asked to be answered to analyze the relationship between self-control and relative academic performance. After our collection, the linear regression method is offered further to analyze the correlation between self-control and academic performance.

This study aims to explore the impact of self-control on academic performance among Chinese adolescents. It is expected that adolescents with a higher level of self-control would get better academic performance.

## 2. Methods

### 2.1 Participants

Because this study mainly focused on the relationship between adolescent self-control and academic achievement, the achievement standards in different schools are inconsistent. So we chose to study the grades of our middle and high school students at the same school so that they could be compared. The Data of this study was collected from a school in China. The survey used a random sampling method to sample a certain number of students from grades 8, 9, and 10, with a sample size of 99. Of these, 99 students included boys and girls, both of whom were evently represented, the standard deviation is 0.50; the youngest is 14 years old, the oldest is 18 years old, and the average age is around 15.8 years old, and the standard deviation is 0.81.

### 2.2 Measures

#### 2.2.1 Self-control scale

A brief version of Self-Control Scale is a 13-item measure of self-control level from all different types of self-control failure (e.g., control over thoughts, emotional control, impulse control, performance regulation, and habit breaking) [7]. With higher scores indicating higher self-control ability. Items are rated on a Likert 5-point scale, from 1 not at all like me to 5 very much like me. For example, if a person rates 1 point for the item that it is difficult to change bad habits, it means that his or her situation does not meet the this description, and he or she is more likely to change bad habits. Furthermore, previous studies confirm that the questionnaire is well-validated [7]. The Cronbach's α of self- control in current study is 0.78.

#### 2.2.2 Academic performance

The academic performance is presented by their final exam score with the full mark of 100. This academic performance score is not a scaled score for each subject in a single exam, but a comprehensive overall assessment score. Among them, homework accounts for 10%, ordinary exams account for 20%, midterm exams account for 30%, and final exams account for 50%. Because the total score of each grade level varies among different grade, in order to make the academic level of all subjects comparable, we use the ratio of their final grades to their final full grades as a measure. In addition, participants' basic information, such as age, grade, and gender were collected in this study.

### 2.3 Data Analysis

The statistical software used in the data analysis section is SPSS 23.0, statistical methods such as descriptive statistic, correlation analysis, and regression analysis were used.

# 3. Results

## 3.1 Descriptive Statistics and Correlations

For analyzing the correlation between two variables, it is compulsory to describe the average number in statistics for both variables for reliability. The average score per question of Brief Self-Control Scale from 1 to 5 is on the medium (M = 2.92, SD = 0.58), which means the samples have relatively medium self-control ability. The maximum and minimum score of self-control score is 4.54 and 1.94, relatively. For academic performance, the average of overall appraisals is relatively high (M = 0.7982, SD = 0.11263). The overall distribution of the percentage of academic performance of samples showed a level above the average compared to the whole target population. However, the maximum and minimum academic performance percentage is 94% and 12%, respectively. The correlation between self-control and academic performance is positively significant ($r = 0.22$, $p < 0.05$). This correlation verifies the hypothesis in this study.

## 3.2 Regression of Self-Control on Achievement Performance

Regression analyses were performed separately for self-control and academic performance (see Table 1). Step 1 of this model included only covariates (i.e., gender, age and grade). In step 2, teenagers' ability of self-control was added to determine the hypothesis regarding the association between their ability of self-control and academic performance. The same procedures were used for all regression analyses. Table 1 presents the regression results.

As shown in the results displayed in the columns labelled step 1, teenagers' age, gender and was not positively related to their academic performance. Simple slope analysis showed that, as hypothesized, the association between gender and academic performance was not stronger, B =0.00, SE = 0.34, $t$ =0.00, $p$ = 0.997. The association between age and academic performance was not stronger, B = -0.04, SE = 0.02, t = -0.57, $p$ = 0.121. The association between grade and academic performance was not stronger, too. B = -0.03, SE = 0.03, $t$ =1.03, $p$ = 0.304.

**Table 1**. Regression of self-control on achievement performance

| Variables | Step 1 | | | | Step 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | B | SE | *t* | *p* | B | SE | *t* | p |
| (Constant) | 1.32 | 0.34 | 3.93 | < 0.001 | 1.23 | 0.33 | 3.71 | < 0.001 |
| Gender | 0.00 | 0.02 | 0.00 | 0.997 | 0.00 | 0.02 | -0.03 | 0.980 |
| Age | -0.04 | 0.02 | -1.57 | 0.121 | -0.04 | 0.02 | -1.77 | 0.080 |
| Grade | 0.03 | 0.03 | 1.03 | 0.304 | 0.04 | 0.03 | 1.41 | 0.162 |
| Self-control | | | | | 0.05 | 0.02 | 2.29 | < 0.05 |
| $R^2$ | 0.028 | | | | 0.079 | | | |
| $\Delta R^2$ | | | | | 0.051 | | | |
| *p* | | | | | < 0.05 | | | |

As shown in the results displayed in the columns labelled Step 2, after controlling for age, gender and SES, teenagers' ability of self-control was positively related to their academic performance. Thus, Hypothesis was supported. The interaction between teenagers' ability of self-control and their academic performance was significant. Simple slope analysis showed that, as hypothesized, the association between self-control and academic performance was stronger, B = -0.05, SE = 0.02, $t$ = 2.29, $p < 0.05$.

# 4. Discussion

The present study was a preliminary study examining correlational a on the relationship between teenagers' ability of self-control and their academic performance [5, 6, 7]. The hypothesis was largely supported in that the higher the ability of self-control is, the higher the academic performance is. If self-control is correlated with students' academic performance, it shows a way that students can

improve performance by practicing self-control [8, 9]. These results are consistent with previous research. As the article "Self-Control and Academic Achievement" said before, there are several strategies that can be applied in the self-control process. There are four types of self-control strategies that can be applied in the process: Situational strategies (by changing the environment), Attentional strategies (by changing the subject that the individual pays attention to), Appraisal strategies (self-defining the expectancies of goal and objective process), response strategies (by restraining the individual compulsorily) [10, 11].

The present study should be considered within the context of their limitations.

Firstly, considering the fill-in time and the patience of students, we believed that the Brief Self-Control Scale is more appropriate to apply to the questionnaire than the complete Self-Control Scale. Thus, it can lead to a deviation that the self-control score of students is not comprehensive [12]. Specifically, the self-control score is subjectively filled in by participants. There are differences in self-recognition. For example, students who are modest easily have self-recognized differences. Therefore, even if they fill in the questionnaire with modest answers, which leads to fewer self-control scores that can belittle the authentic situation, the researchers have no way of knowing.

Second, it is arguable that if some students tend to go overboard on one or some subjects, their evaluation of the relationship between self-control ability and academic performance could deviate. For example, one student is good at science but hates languages. However, students might be highly enthusiastic about science subjects but show lower interest in Chinese and English learning. Correspondingly, students might have had better self-control ability when they were engaged in tasks that are related to science because of his high interests. However, when students were doing related tasks related to Chinese and English, they might be easily distracted because of a lack of interest. And that leads to the question of whether self-control ability can fluctuate when an individual is doing totally different tasks [6, 8, 13]. Back to the experiment, we believe that some of the students have extraordinary academic performance in some subjects but show overall lower academic performance because we use the percentage of the sum scores of two important exams. Similar to the measure of academic achievement, does the self-control ability differs from different tasks and subjects? We re-read the statements in the Brief Self-Control Scale and discovered that there is only one or two questions are specifically for self-control in the overall situation. Thus, it means that there are only one or two columns of scores that can deviate from the whole self-control score. Excluding those statements, other statements are all rough that not require a detailed situation. Thus, the self-control ability in this questionnaire will not large deviated from the authentic data by the reason of fluctuating self-control in different situations [14, 15].

Thirdly, this study considered the identity of participants. In this experiment, 99 international students were collected in just one school in Shanghai. The problem is that we do not focus on the differences between the local department, which need to attend Gao Kao and international department. It is assumed that different educational systems can cultivate students with different features and minds. When under extremely strict discipline, self-control is not self-initiated. Thus, the students who learned in the local department might have a different relationship between self-control ability and academic performance. However, there is another surmise: because of the strict discipline, the students in the local department might have higher self-control ability and relatively higher academic performance. This can be conducted in further studies and improved by random sampling in China for adolescents.

Fourthly, there are still limitations on academic performance. Because academic performance includes Impressive Test Scores, Extracurricular Accomplishments, and Student Leadership [16], these indicators are difficult to reflect only through students' academic performance in school, so the experimental results have a certain one-sidedness. Therefore, in the subsequent research, in order to make academic performance more comprehensive and valuable, it should be integrated into the student's IQ value, the performance of the club, or the comprehensive reference of the performance of the extracurricular class. Although the research and experiment show some data limitations, the study's importance is still significant and remarkable.

## 5. Conclusion

The participants of this study have medium self-control scores, which indicate that they have relatively averaged self-control ability. Furthermore, their academic performances are above the average of the target population. Overall, the empirical evidence shows that self-control ability is significantly correlated with academic performance. It is not a causal relationship because there is no evidence to prove which factor is the cause and which factor is the effect. Self-control ability and academic performances are highly interdependent with each other. Self-control could be the trigger or feature of those highly remarkable students who show excellent academic performance, but it also could be the outcome of a spirit of putting effort into studying.

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