

The Role of Self-Control and Study Engagement in Improving Oral Expression and Written Statement Ability of Freshmen

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Abstract: Objective To investigate whether and how each specific personality traits in students graduated from high school influence their various performance, especially oral expression and written statement ability, in university. **Method** Students' basic information, social-status features and personality traits were collected and evaluated at the beginning of the semester. Their four types of study performances were assessed at the end of the semester. Non-parametric test was to investigate performance difference in demographic characteristics, Spearman correlation was used to find the relationship between personality traits and course performance, and multiple linear regression was computed to identify the independent influencing factors. **Results** Attendance was affected by gender, ethnicity and time perspective; discussion score was affected by been class leader and self-control; quiz was influenced by ethnicity, gender and interaction of self-control and study engagement; and essay score was influenced by been class leader and also interaction of self-control and study engagement. **Conclusion** Been a class leader during high school study has positive impact on undergraduate's oral and written skills. Self-control and study engagement are the essential predictors of student's performances and contribute significantly to their oral expression and written statement ability.

1. Introduction

"A guided reading of natural sciences classics", a course for liberal education in Wuhan university, is to help students understand the origins, methods and further trends of natural sciences, improve the ability to read classics, be familiar with the way of thinking of natural science, and have the ability of reasoning and critical thinking. From 2018, freshmen accepted into Wuhan university are all required to have this course. Students will be comprehensively assessed from four aspects containing attendance, discussion, quiz and essay, which respectively contribute 10, 30, 30 and 30 percent to the overall score.

For freshmen who has just entered college, the education in high school helped them establish attitude toward life and develop a great many study habits including one's study engagement, self-control, temporal perspective, self-efficacy and so on. Study engagement is indicative of how much a student participates in learning. Self-control, defined as an ability to alter, modify or override one's impulses, desires, and habitual responses, has much to do with students' performance. Temporal perspective plays a fundamental role in the selection and pursuit of social goals. Self-efficacy is a subjective judgement of whether one can successfully attain certain achievement which can directly influence motivation for work and study.

When entering university, students' personal traits play a critical role in their performance in class and in grade point average (GPA). Numerous studies demonstrated the association between these personal traits and learning outcomes. For instance, Hancock et al.'s study[1] showed that a student engaging more in activity performs better in exams. Shernof et al.[2] also concluded that student engagement has a significant effect on perceived learning and course grades. However, Boulton et al.[3] found an unexpected negative relationship between engagement and academic outcomes,

although there is a positive interaction between engagement and happiness. For self-control, Duckworth et al.[4] believed that self-control, together with other factors such as socioeconomic status, motivation, initial intelligence, etc., predict academic performance and course grade reliably. Meanwhile, Kuhnle et al.'s[5] study suggested not only can self-control assist students for their school grades, but also for life balance and flow. In terms of temporal perspective, Donoso et al.[6] investigated construct of temporal perspective factors and academic grade, and found a close relationship between them. A research by Horstmanshof et al.[7] also demonstrated that temporal perspective is beneficial to academic application and orientation. Refer to self-efficacy, Crego et al.[8] discovered that students perceived themselves as more efficient in examinations got better feedback from examinations. Brown et al.'s study[9] showed that academic self-efficacy only contributes little to overall score. Nonetheless, previous studies focus on the overall academic performance, how the students' personality traits affect their specific capability is unclear. Furthermore, studies evaluated such relationships were usually cross-sectional design. Therefore, we intend to investigate whether and how the student's personality traits during high school account on their diversified performance in university course and propose following hypotheses:

- (1) All of these personality traits we put in research will play a role in course performance;
- (2) Been a class leader may be beneficial on oral expression ability;
- (3) Course performance will be different in gender and parent's educational level.

2. Method

2.1. Participants

14 out of 25 classes of 2019 freshman from Natural Science Guidance Course in Wuhan University, Hubei Province, China, were randomly recruited for current investigation. Demographic information and personality features were collected at the beginning of fall semester by questionnaire, data of study performance were collected from participants' instructors at the end of semester.

2.2. Measures

2.2.1. Demographic Characteristics

Basic information includes gender, ethnicity, only child in family, family location, parents' education level, and class leadership during high school.

2.2.2. Study Engagement

Chinese version of Utrecht Work Engagement Scale-Student (UWES-S)[10] was applied, and the Cronbach alpha in our study is 0.952, demonstrating good internal consistency. The 7-point Likert scale, with 1 representing NEVER and 7 representing ALWAYS, comprises 17 items classified into 3 dimensions, vigor, dedication and absorption, which includes 6, 5, 6 items respectively. The engagement is scored by summing the three dimensions, and higher score indicates better study engagement.

2.2.3. Self-control

Chinese version of Self-Control Scale (SCS)[11] consists of 5 dimensions: Temptation resistance (6 items), Impulse control (4 items), Healthy habits (3 items), Job focused (3 items) and Entertainment resistance (3 items). Each item includes 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). Score of self-control is calculated by summing the mean score of each dimension, and higher score indicates better self-control. Cronbach alpha is 0.836.

2.2.4. Temporal Perspective

Temporal perspective scale[12] consists of 28 items reflecting 6 dimensions, Negative future (7 items), Positive future (5 items), Confused future (4 items), Future persistency (5 items), Clear future (3 items) and Future plan (4 items). Temporal perspective is graded by the sum of all items, and the higher the score, the better the students' temporal perspective. The Cronbach alpha is 0.791

indicating good effectiveness.

2.2.5. Self-efficiency

Chinese version of general Self-Efficacy Scale (GSES)[13] with 5 degrees ranging from totally disagree to totally agree for 10 items is used. The potential score is between 0-5 with higher GSES score indicating greater students' self-efficiency. Cronbach alpha is 0.920, representing good reliability.

2.2.6. Students' Performance

The final score of Natural Science Guidance Course consists of four parts: Attendance encourages class participation, Discussion checks oral communication skill which includes presentation, group discussion and class discussion, Quiz containing ten quizzes before every class tests the acquired knowledge, and Essay reflects written ability, with attendance accounts for 10% of overall score, the other three account for 30% each.

2.3. Data Analysis

SPSS 23.0 is used for all data analysis. Normality of distribution is assessed by Q-Q plot and histogram. Numerical data are expressed as Mean±SD, and analyzed by Student t test for two groups comparison or ANOVA for multiple groups comparison when data are in the normal distribution, otherwise Mann-Whitney U test or Kruskal-Wallis test will be applied accordingly. Category data are expressed as N (%), and analyzed by chi-square test. Spearman correlation was to find the relationship between personality traits and course scores. Multiple linear regression was computed to identify independent influencing factors of academic performance which includes attendance, discussion, quiz, essay scores. Two models, basic model including demographic factors, and personality traits model, adding factors of personal features to the basic model, were established to fit and predict academic performance by stepwise regression.

Table 1 The students' course performance by demographic features.

Variable	N	Attendance		Discussion		Quiz		Essay		Overall	
		M±SD	Z	M±SD	Z	M±SD	Z	M±SD	Z	M±SD	Z
Gender			-5.54**		-1.78		2.58**		-2.62**		-0.91
Male	889	90.9±8.8		86.3±5.5		83.2±9.3		86.6±4.3		85.9±3.9	
Female	685	93.1±8.2		86.5±5.9		82.1±9.3		87.1±4.6		86.0±4.1	
Ethnicity			-2.74**		-0.08		3.62**		1.66		2.93**
Han	142	91.7±8.6		86.4±5.7		83.0±9.3		86.9±4.4		86.0±4.0	
Non-Han	146	93.6±8.4		86.5±5.3		80.3±9.1		86.3±4.2		85.3±3.5	
Only Child			-1.20		1.80		3.02**		2.73**		3.42**
Yes	914	91.7±8.5		86.6±5.6		83.2±9.5		87.0±4.8		86.2±4.1	
No	660	92.1±8.7		86.2±5.7		82.0±9.0		86.5±3.9		85.6±3.9	
Location			0.99		3.11		6.01		13.35**		12.40**
Provincial capitals	357	91.7±8.7		86.2±6.0		82.5±10.2		87.0±5.1		85.9±4.7	
Prefecture-level city	466	91.6±8.8		86.8±5.5		83.5±8.9		87.2±3.8		86.4±3.7	
Country/Town	520	92.2±8.4		86.4±5.6		82.3±9.2		86.5±4.7		85.8±3.9	
Village	231	91.8±8.7		86.2±5.6		82.3±8.8		86.4±3.8		85.7±3.5	
Father's Education			0.28		2.73		2.13		6.72*		6.38*
Middle school and below	470	91.9±8.6		86.3±5.5		82.3±8.9		86.5±3.9		85.7±3.7	
Senior high school	605	91.9±8.7		86.2±5.9		82.8±9.4		86.9±4.5		86.0±4.2	
Undergraduate education	499	91.7±8.5		86.8±5.5		83.0±9.5		87.0±4.8		86.2±4.0	
Mother's Education			2.45		2.89		1.78		14.99**		6.66*
Middle school and below	581	91.7±9.0		86.3±5.4		82.5±9.2		86.5±3.7		85.8±3.7	
Senior high school	608	92.3±8.3		86.3±5.6		82.6±9.6		86.7±5.3		85.9±4.3	
Undergraduate education	385	91.4±8.6		86.7±6.2		83.3±8.9		87.5±3.8		86.4±3.9	
Been Class Leader			0.53		3.41**		-0.28		2.45*		2.33*
Yes	102	91.9±8.7		86.7±5.7		82.7±9.3		87.0±4.4		86.1±4.0	
No	548	91.8±8.4		85.9±5.5		82.7±9.4		86.4±4.6		85.7±4.0	

Note. *p<0.05, **p<0.01

3. Result

3.1. Basic Characteristics of Participants

We received 1998 questionnaires and its effective rate is 78.8%. A total of 1574 freshmen participated in this study, among which 889 (56.5%) are males, and 914 (58.1%) are the only child. The majority of students are Han Nationality (1428, 90.7%). In addition, about half of students live in cities. Mothers of 581(36.9%) students have graduated from junior high school or haven't received systematic education, 608 (38.7%) have graduated from senior high school and 385(24.4%) have had degree of bachelor or above. Fathers' education level is a little higher than mothers. In addition, more than two third of students (1026,65.2%) have been class leader while in high school. (Table 1)

In four categories of scores, attendance score has the highest average (91.84 ± 8.61), while quiz score has the lowest one (82.70 ± 9.29). Between them are essay score (86.81 ± 4.43) and discussion score (86.42 ± 5.66). The mean and standard deviation of overall score is 86.01 and 4.07.

3.2. Personality Traits are Associated with Course Performance

As Table 1 shows, been class leader has better discussion score; male, only child and Han students perform better in quiz; students, who are female or Han or been class leader or living in city or whose parents had undergraduate and above education, have higher writing score. All demographic factors, except gender, play roles in the overall performance. Regarding students' personality traits, self-control positively correlated with quiz score ($r=0.061$, $p<0.05$), study engagement has positive correlation with quiz ($r=0.093$, $p<0.01$) and essay score ($r=0.052$, $p<0.05$). However, temporal perspective has negative correlation with attendance ($r=-0.052$, $p<0.05$), and self-efficiency has no relationship with any kind of academic performance. On the whole, both self-control ($r=0.076$, $p<0.01$) and student engagement ($r=0.080$, $p<0.01$) have high-positive correlation with overall score.

3.3. Self-control and Study Engagement are Independent Influencing Factors of Course Performance

We first identified demographic factors in course performance, finding that gender and ethnicity are significant in attendance score; been class leader remains for discussion; gender, ethnicity, and only child and gender are for quiz, and been class leader, family location, and mother's education are for essay. For overall performance, the independent variables are 'ethnicity' 'only child', and 'location', same as they are in quiz score.

We further introduced personality traits in the abovementioned models, and found that there are interactions between personality traits. Table 2 shows that independent variable temporal perspective negatively predicts students' attendance, while self-control positively affects discussion score. Besides, self-control and study engagement interaction have positive effect on students' quiz, essay score and overall performance. Surprisingly, self-efficiency does not remain in the models.

Table 2 Linear regression on independent influencing factors of course's performance.

Dependent variable	Independent variable		B	SE	Standardized beta	t (P value)	R ²	F (P value)
Attendance	Gender	Male	-2.25	0.43	-0.13	-5.19(0.00)	0.023	12.39(0.00)
		Female			[reference]			
	Ethnicity	Han	-1.74	0.74	-0.06	-2.35(0.02)		
		Non-Han			[reference]			
	Temporal perspective	-0.04	0.02	-0.05	-2.06(0.04)			
Discussion	Been class leader	Yes	0.76	0.30	0.06	2.52(0.01)	0.007	5.66(0.00)
		No			[reference]			
	Self-control	0.10	0.05	0.05	1.96(0.05)			
Quiz						0.018	9.40(0.00)	

Ethnicity	Han	2.31	0.80	0.07	2.90(0.00)		
	Non-Han			[reference]			
Gender	Male	0.95	0.47	0.05	2.04(0.04)		
	Female			[reference]			
Self-control*Study engagement		0.003	0.00	0.09	3.61(0.00)		
Essay						0.015	5.91(0.00)
Location	Prefecture-level city	0.54	0.25	0.06	2.20(0.03)		
	Village			[reference]			
Mother's education	Middle school and below	-0.84	0.30	-0.09	-2.87(0.00)		
	Senior high school	-0.68	0.29	-0.08	-2.22(0.02)		
Self-control*Study engagement	Undergraduate education			[reference]			
Self-control*Study engagement		0.001	0.00	0.07	2.66(0.01)		
Overall						0.016	12.97(0.00)
Only child	Yes	0.52	0.20	0.07	2.66(0.01)		
	No			[reference]			
Self-control*Study engagement		0.001	0.00	0.11	4.23(0.00)		

4. Discussion

4.1. Self-control and Study Engagement are Predictors of Academic Performances

Our findings revealed that students who score higher in self-control and study engagement have better performance in the course, in line with a great many studies[1,2,4,5], although the regression coefficients of interaction of self-control and study are small. The standardized regression coefficients are relatively high compared with other independent variables', indicating more contributes in the models.

Self-control, most predict final performance consist of discussion score, quiz score and essay score, is widely considered as a vital predictor of academic achievement. Some authors supported that self-control holds important explanatory value for both subjective and objective achievement[14]. With higher level of self-control, students achieve more by deliberately strengthening impulses that are congruent with, and dampening impulses that are incongruent with their academic goals[4]. Furthermore, students are better able to distribute their time over academic and leisure matters, and are better able to shield their studying against distractions[5,15]. A study[16] found the association between self-control and one's autonomous motivation needed during discussion in which students have to prepare for the theme of the discussion and take the initiative to communicate with panel members or other students in public. In addition, some other studies revealed the intermediation of self-control between independent variables (i.e., need for cognition, shyness) and school achievement [17,18].

Study engagement is another positive indicator of students' learning outcome and also a significant factor influencing school policy according to present studies[6,19]. What's new in our findings is the interaction of self-control and study engagement in predicting quiz and essay scores. The common feature of quiz and essay is knowledge based which is relatively time-consuming, requires more engagement and higher self-control.

4.2. Been a Class Leader Improve Ability of Oral and Written Communication

We found that students who have been class leader during high school perform better in discussion. Team work requires comprehensive talents including motivation, expression and communication, organization, team spirit, etc. As a class leader, student has more opportunities to speak in public and

to communicate with both teachers and classmates. Subsequently, the one develops better skill and builds confidence in oral expression. Moreover, attaching importance to team cohesion, a class leader often acts as facilitator in group discussion, meanwhile, as a representative to organize and deliver main results. Therefore, providing opportunities for most students to experience being class leader during undergraduate study will be a meaningful approach for their integrated capacity and future career development.

4.3. Gender Difference

As shown in previous studies, female students perform better than their male counterparts and achieve higher scores[6,20], as well as to obtain more study confidence and motivation[21,22]. To be specific, we stratified the academic performance into four parts which represents different capability. We found that female students gained higher score in class attendance whereas male students performed better in quiz. Moreover, females keep joining in the class on time, indicating they are in better discipline compared with males, which is, in line with previous findings[23], though no gender-related difference was found in the overall scores. In terms of quiz, males seem to master knowledge more deeply and quickly, or in the other hand, males reported lower level of anxiety during an examination[24].

4.4. Students with Long Temporal Perspective Tend to Skip Classes

Class attendance depends on all kinds of reasons including students' motivation, students' learning strategies, quality of teaching, interesting of the class, grade point average (GPA) and so on[25-27]. Surprisingly, in our survey, students' temporal perspective has negative impact on their class attendance, suggested that if students have better plans for the future, they don't take class participation as a critical part of study. Instead, they would like to do more meaningful things they think such as completing other course homework, going on social activities[26]. Similar conclusion came from Kauffman et al.'s group that students with high confidence is least likely to attend the class[28], demonstrating that people who believe they can arrange themselves effectively and rationally will skip classes which are not important enough.

The purpose we bring attendance into the criteria of undergraduate's performance is to inspire students to participate in classes to obtain knowledge which not presents in textbook. As a matter of fact, class attendance having positive effect on learning outcome was proved in Tetteh's research[27]. Nevertheless, different from Kauffman et al.'s study[28], in which, attendance was no longer an effect marker for performance. In our study, attendance score is still related to the overall score significantly ($r=0.123$, $p<0.01$) although the association with overall performance is less strong than other three parts (0.511 for discussion, 0.739 for quiz, 0.536 for essay). It might be due to negative correlation ($r= -0.182$, $p<0.01$) between attendance and quiz test in our study. Therefore, whether attendance should be scored or just to be thought highly of is worthy further exploration.

4.5. Strength and Limitations

Stratifying the overall performance into four parts to reflect different types of capabilities enable us to investigate specific influence of various personality traits on each type of performance.

Several limitations should be noted in our study. First, quiz, discussion and essay, each consists of 30% of the overall score, and the overall score can be explained most by quiz score($r=0.739$), suggested that quiz brings greatest gap among students' overall performance. To be noted that quiz test is graded objectively, while discussion and essay are subjectively, depending on group overall level, teacher's favorite and class pass rate et.al. Second, association between self-control and study engagement may be reciprocal, which should be further identified in future studies. Third, the scores were generally high because all students are all from Wuhan university with relatively high ability, which may cause selection bias.

5. Conclusion

Self-control and study engagement are the essential predictors of student's performances and

contribute to undergraduates' oral expression and written statement ability. Been a class leader plays an important role in student's oral and written communication. College education should pay attention to students' personality characteristics, aim at the target, and train high-quality talents with all-round development.

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