

A study on the correlation between happiness index and academic performance of secondary school students - based on the analysis of PISA 2022 data

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Abstract:

Taking the results of PISA2022 data as an example, the text analyses the happiness index of secondary school students, discusses the current situation of the happiness index of contemporary secondary school students, and focuses on factors affecting the academic performance of secondary school students, and unfolds the research on students' positive emotions. The purpose of this study is to enrich the correlation study of academic performance, describe the current situation of the happiness index of secondary school students, discuss the correlation between the happiness index of secondary school students and academic performance, and seek to supplement the influencing factors of secondary school students' academic performance, so as to improve the theoretical results continuously. It also makes suggestions for schools, parents and students to discuss how to diversify and improve secondary school students' academic performance in the future.

Keywords: Happiness index, Academic achievement, Correlation study, Satisfaction index

1. Introduction

With the continuous development of education, the academic pressure on students is increasing. In recent years, the research on the factors affecting students' academic performance has been increasing. The purpose of this paper is to digitise the emotion of happiness and define the concept of happiness index, which in terms of theoretical significance can enrich the previous research on the factors affecting academic performance. In addition, the study also helps to deepen the understanding of the correlation between happiness index and academic performance among secondary school students. In terms of practical significance, this study provides a new perspective for researchers to understand the factors affecting the academic performance of secondary school students in the future, and it can further help to understand what factors affect the academic performance of secondary school students, and it provides relevant suggestions for schools, parents and students on how to improve their academic performance in joyful learning in the future.

2. Literature review

2.1 Research on the Happiness Index

Most scholars believe that the indices of happiness were

first formally proposed by the British scholar Bentham George, who believed that happiness could be measured by the emotions associated with it, and proposed seven auxiliary measurement references: intensity, persistence, certainty, proximity, additionality, purity, and extension. [1] Fourteen needs for happiness were then proposed. Finally, "the greatest happiness of the greatest number" is proposed as a "quantitative" measure of happiness. In many cases, there is no specific boundary between happiness and well-being, and the word happy is often translated as either happy or well-being in different contexts. In economics and sociology, the term happy is often used as a measure, while in psychology, happiness is used more often. In general, the pleasure index and the happiness index have the same meaning. [2] The happiness index is based on the economics of happiness, and is a specific number, such as a percentage, tenths, etc., that indicates how happy people are. A series of words indicating emotions such as happy, blissful, sadness, etc. usually start from people's subjective will, so they carry strong subjective attributes. [3] Although emotions are internal, they are based on objective reality. [4] Whether it is the happiness index discussed in this article, or the "sadness index" or "satisfaction index" that may be used in the future, if one of the emotion words is not subjective or objective, the in-

dex loses its meaning and value of measurement. The happiness index in this paper refers to a quantitative data that combines the feelings of secondary school students in and out of school life. It is affected by students' satisfaction with life, students' sense of belonging index, and students' index of bullying at school. In this paper, the happiness index is divided into two parts: students' own factors and external factors, which include stress tolerance, peer relationships, sleep quality, etc., while external factors include the government's policy of reducing students' burdens, family relationships, and the arrangement of psychological courses of study.

2.2 A study on factors affecting the academic performance of secondary school students

At present, academic research on the factors affecting the academic performance of secondary school students mainly focuses on the development of questionnaires affecting the academic performance of secondary school students, the classification of factors affecting the academic performance of students, and the correlation between the factors affecting the academic performance of students and the comparison of the correlation between the factors affecting the academic performance of students and the academic performance of secondary school students.

First of all, researchers' understanding of the factors affecting secondary school students' academic performance is basically the same. Based on the existing research, the factors affecting secondary school students' academic performance can be divided into two main categories, one of which is from the students' own level: self-efficacy, achievement goal orientation, motivation, learning pressure, self-esteem, parental influence on the students, students' emotional control, and so on. The other category can be divided into external dimensions: teachers' concern for students, teacher-student relationships, peer relationships, etc.[5] The impact of autonomy reforms on academic achievement has also been suggested, as autonomy reforms contribute to student achievement, but the relationship is not positive in all cases, with some studies concluding that autonomy has a detrimental effect on student achievement in developing countries and low-performing countries, but the opposite is true for developed countries and high-performing countries.[6] Similarly, some foreign scholars have also studied the academic performance of Chinese secondary school students and peer relationships, due to China's different historical and cultural background from other countries, as well as China's unique Confucianism and other factors. China's social and educational competitive pressure is greater than that of other countries, according to the survey shows that the pressure suffered by Chinese teenagers is smaller than that

of other countries, and unlike other countries where the camaraderie between secondary school students and their peers is often based on emotional exchanges, the camaraderie of secondary school students in China is often based on helping each other in learning problems.[7]

At present, the inquiry into the happiness index is basically a connotation inquiry, and there are fewer studies on the current situation and empirical research. By reviewing and analysing the existing literature in the field of secondary school students' academic performance, it is found that research on such issues has achieved some success. However, there are still more relevant factors that need to be further analysed and studied. On this basis, it can be found that the research in the field of analysing the influencing factors of secondary school students' academic performance has been gradually expanded and extended from a single aspect or angle to diversification, but it is still relatively small in number. In this paper, we will conduct a comprehensive investigation from various aspects of secondary school students' psychology to enrich the diversified factors affecting academic performance.

3. Data sources and methods of analysis

3.1 Data sources

PISA2022 added questions about the epidemic, but this year four Chinese provinces and cities (Beijing, Shanghai, Jiangsu, and Zhejiang) did not participate in the questionnaire. This study uses the results of the PISA2022 questionnaire for students and the happiness questionnaire for students. Since the happiness questionnaire for students only includes the United Arab Emirates, Slovenia, Spain, Saudi Arabia, Panama, New Zealand, the Netherlands, Mexico, Macao (China), Ireland, Hungary, Hong Kong (China), Costa Rica, and Brazil, this study uses the questionnaire for those countries and regions that participated in the questionnaire. The results of the happiness questionnaires of the students from these countries and regions and the correlation between the students' questionnaires on life satisfaction and the level of bullying in school and the students' maths scores in these countries and regions are discussed in this study. Students who scored less than 60% of the total score on the well-being questionnaire and those who scored after 800 were removed, resulting in a final sample size of 800 students. Descriptive statistics of the regions in the sample size show that there are three regions out of the 23 regions that are more significant: "34800", "48400", "70500" and "70500". " which represent Hungary, Mexico and Slovenia respectively. Among them, Slovenia has the largest share of sample size, up to 23.9 percent (Table 1).

Table 1: Descriptive statistics for all regions studied

REGION		Frequency	Percent
Valid	34800	109	13.6
	48400	99	12.4
	55400	73	9.1
	70500	191	23.9
	72401	17	2.1
	72402	21	2.6
	72403	15	1.9
	72404	21	2.6
	72405	10	1.3
	72406	14	1.8
	72407	13	1.6
	72408	19	2.4
	72409	20	2.5
	72410	27	3.4
	72411	18	2.3
	72412	20	2.5
	72413	19	2.4
	72414	12	1.5
	72415	19	2.4
	72416	34	4.3
	72417	19	2.4
	72418	6	0.8
	72419	4	0.5
	Total	800	100.0

3.2 Introduction of variables

3.2.1 Study specific variables and measurements

Setting the independent variables: 'happiness index' level of bullying, life satisfaction, health, well-being, and the dependent variable: students' academic performance (maths grades)

3.3 Findings

3.3.1 High overall score on the student happiness index

The results of the questionnaire on well-being covered in this study were generally high scoring, with a mean of 193 above the passing line and 214 for the top 800 students out of a total score of 272, with a maximum of 245 and a minimum of 195 in the questionnaire on students' well-being, in terms of students' health, their evaluation

of themselves, their relationship with family and friends, the frequency of and feelings about studying, the frequency of outdoor activities/exercise (this paper excludes the results of the height and weight questionnaire and the frequency of and feelings about maths lessons and language test lessons in WB165-WB168). Frequency of outdoor activities/exercise (This paper excludes the results of the height and weight questionnaires and the frequency and feelings of maths lessons and language test lessons in WB165-WB168. It is argued that height and weight are not necessary variables to influence students' well-being, and that evaluations of maths and language tests can be summarised directly in terms of learning issues).

3.3.2 Low bullying index

There were nine questions on the student survey ST038 about student bullying in schools, including "I have received threats from other students" and "I stay home and don't go to school because I don't feel safe at school," with responses such as "Never or almost never = 1, a few times a year = 2, a few times a month = 3, once a week or more = 4". The results were obtained after descriptive statistics of the selected sample with a mean value of 1.09. The results showed that among the students of the selected sample, the overall level of being subjected to bullying in school is less but still the presence of bullying in school with a maximum value of three. The level of bullying is negatively correlated with other variables, the higher the level of bullying, the lower the happiness index of the students. The mean value of bullying in OCED is -0.30, which indicates that other countries should continue to pay attention to the impact of bullying in schools on students' performance, happiness index, to reduce and eliminate the occurrence of bullying in schools.

3.3.3 High life satisfaction scores

According to the results of question ST016 in the student questionnaire, the mean score of life satisfaction in OCED is 6.75, while the mean of the sample results in this study is 9.20 and the plural is also ten, which results in better than the mean of OCED. The results of the analyses show that students with high happiness indexes are also more satisfied with their lives, and there is a positive correlation between the two.

3.3.4 Health indicators

Question WB150 of the Happiness Questionnaire investigated students' perception of their physical condition, and 78 per cent of the students in the sample considered their physical condition to be excellent. A healthy body enables students to be happier in experiencing campus life and interacting with peers and family members, and according to the results of the correlation analysis, it can be con-

cluded that there is also a significant relationship between students' health and happiness index.

Table 2: Correlation analyses were conducted for the variables

Correlations					
		Bully	Happyindex	Overall, how satisfied are you with your life as a whole these days?	How is your health?
Bully	Pearson Correlation	1	-.005	-.078*	-.082*
	Sig. (2-tailed)		.889	.027	.021
	N	800	800	800	800
Happyindex	Pearson Correlation	-.005	1	.123**	.310**
	Sig. (2-tailed)	.889		<.001	<.001
	N	800	800	800	800
Overall, how satisfied are you with your life as a whole these days?	Pearson Correlation	-.078*	.123**	1	.177**
	Sig. (2-tailed)	.027	<.001		<.001
	N	800	800	800	800
How is your health?	Pearson Correlation	-.082*	.310**	.177**	1
	Sig. (2-tailed)	.021	<.001	<.001	
	N	800	800	800	800

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Four variables, life satisfaction, the mean of the number of times students were bullied, the students' health index, and the results of the happiness questionnaire, were analysed for correlation. The results showed that the happiness index was not correlated with the level of bullying, and was significantly correlated with life satisfaction and physical health, with Pearson's correlations of 0.123 and 0.310, respectively, and both two-tailed less than 0.05 (Table 2). Regression analyses were performed for the independent dependent variable The selected independent

variables were analysed by multiple linear regression with the dependent variable, and according to the regression results, the significant phases of the degree of bullying, happiness index, life satisfaction, and students' health status are all <0.05, which means that all of the selected independent variables can significantly affect the students' mathematics achievement (Table 3). That is, the greater the happiness index, the better the students' performance in mathematics.

Table 3: Regression analysis was performed for each variable

Coefficients ^a					
		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	t
1	(Constant)	468.831	1.815		258.239
	Bully	-57.820	1.613	-.202	-35.851
2	(Constant)	424.839	3.021		140.633
	Bully	-58.436	1.604	-.204	-36.420
	Overall, how satisfied are you with your life as a whole these days?	4.857	.267	.102	18.165
3	(Constant)	263.494	11.465		22.982
	Bully	-61.902	1.616	-.216	-38.294
	Overall, how satisfied are you with your life as a whole these days?	4.751	.267	.099	17.825
	Happyindex	.790	.054	.082	14.584
4	(Constant)	281.970	11.605		24.298
	Bully	-58.295	1.656	-.203	-35.196
	Overall, how satisfied are you with your life as a whole these days?	4.444	.268	.093	16.582
	Happyindex	.738	.054	.077	13.585
	How is your health?	-6.847	.706	-.056	-9.700

a. Dependent Variable: READING

4. Conclusions and Implications

Based on data from a sample of ten students who participated in the Student Happiness Questionnaire (SHQ) in PISA 2022, this study explored the correlation between the Student Happiness Index (SHI) and students' academic achievement in mathematics using multiple linear regression modelling. The main conclusions are that the happiness index is currently considered to be influenced by four dimensions: students' health, life satisfaction, happiness, and level of bullying. This includes relationships with friends and so on. There is a positive correlation between the happiness index and students' academic performance in mathematics, and an increase in the happiness index

can promote students' motivation.

The results of the selected samples show that these students still experience bullying at school, and in order to ensure that students can study healthily and happily, both society, schools and families should pay more attention to bullying at school. Meanwhile, relationships with friends and parents also take up a large part of the questionnaire, and the companionship of peers is certainly a major component of students' learning at school. However, the relationship with family members is also important, and more emphasis should be placed on communication with students, not only getting pleasure from peers, but also the recognition and concern of parents.

Variable frequency analysis										
virable	option	Frequency	Percent	Mean	Median	Mode	Std.	Variance	Minimum	Maximum
Happyindex	198	1	0.1							
	199	3	0.4							
	200	5	0.6							
	201	14	1.8							
	202	8	1							
	203	11	1.4							
	204	20	2.5							
	205	27	3.4							
	206	30	3.8							
	207	42	5.3							
	208	43	5.4							
	209	45	5.6							
	210	49	6.1							
	211	53	6.6							
	212	49	6.1							
	213	37	4.6							
	214	31	3.9							
	215	26	3.3							
	216	26	3.3							
	217	29	3.6							
	218	25	3.1							
	219	20	2.5							
	220	25	3.1							
	221	28	3.5	214.42	212.50	211.00	8.34	69.54	198.00	245.00
	222	16	2							
	223	26	3.3							
	224	8	1							
	225	13	1.6							
	226	12	1.5							
	227	12	1.5							
	228	10	1.3							
	229	8	1							
	230	10	1.3							
	231	6	0.8							
	232	7	0.9							
	233	3	0.4							
	234	5	0.6							
	235	3	0.4							
	236	3	0.4							
	237	2	0.3							
	238	1	0.1							
	239	2	0.3							
	240	3	0.4							
	243	1	0.1							
	244	1	0.1							
	245	1	0.1							
bully	1	541	67.6							
	1.11	101	12.6							
	1.22	55	6.9							
	1.33	42	5.3							
	1.44	13	1.6							
	1.56	10	1.3							
	1.67	13	1.6							
	1.78	3	0.4							
	1.89	3	0.4	1.1115	1.00	1.00	0.26	0.07	1.00	3.00
	2	4	0.5							
	2.11	1	0.1							
	2.22	3	0.4							
	2.33	2	0.3							
	2.44	4	0.5							
	2.67	1	0.1							
	2.89	1	0.1							
	3	3	0.4							
	0	6	0.8							
	1	5	0.6							
	2	2	0.3							
	3	2	0.3							
satisfied	4	12	1.5							
	5	11	1.4	8.70	9.00	10	1.700	2.890	0	10
	6	22	2.8							
	7	70	8.8							
	8	128	16							
	9	221	27.6							
health	10	321	40.1							
	Fair	5	0.6							
	Good	171	21.4	3.77	4.00	4	0.433	0.188	2	4
	Excellent	624	78							

5. References

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