

Differences of Anxiety Levels between Students of Natural Sciences and Social Studies Major Based on School Environmental Factors in Senior High Schools with *Rintisan Sekolah Bertaraf Internasional* Scheme

Arviana Adamantina Putri¹, Leonardo Lubis², Tatang Muchtar Sutaryan³

¹Faculty of Medicine, Universitas Padjadjaran, ²Department of Anatomy, Faculty of Medicine, Universitas Padjadjaran, ³Department of Psychiatry, Faculty of Medicine, Universitas Padjadjaran/ Dr. Hasan Sadikin General Hospital, Bandung

Abstract

Background: Senior High Schools with *Rintisan Sekolah Bertaraf Internasional* (RSBI) scheme are senior high schools that pilot international standards in learning methods and high curriculum targets. This factor may lead to a rise of anxiety amongst students, both for students in Natural Sciences major and Social Studies major. There are three factors which cause anxiety in the school environment, namely: dissatisfaction towards the curriculum, the teacher, and the school management.

Methods: This study used retrospective cohort design. Subjects were selected using the convenience sampling method. Natural Sciences students (n=32) and Social Studies students (n=14) had their anxiety level measured using the Taylor Manifest Anxiety Scale. The dissatisfaction towards the school environment factors was assessed using a school evaluation questionnaire.

Results: The anxiety measurement showed that students in both Natural Sciences and Social Studies major experienced severe anxiety (Natural Sciences vs. Social Studies: 75% vs. 86%). The study results based on the school evaluation questionnaire showed dissatisfactions towards the three school environmental factors (curriculum factor, Natural Sciences vs. Social Studies: 59% vs. 64%; teacher factor, Natural Sciences vs. Social Studies: 3% vs. 43%; school management factor, Natural Sciences vs. Social Studies: 3% vs. 14%). The chi-square test results showed that the difference in the anxiety levels between the students of Natural Sciences and Social Studies majors was insignificant ($p > 0.05$).

Conclusions: Students of Natural Sciences and Social Studies majors of senior high schools with RSBI scheme experienced severe anxiety. However, there is no strong evidence that the school environment causes this severe anxiety. [AMJ.2014;1(2):65-9]

Keywords: Anxiety Level, natural sciences, senior high school with rsbi scheme, school environment factors, social studies

Perbedaan Tingkat Kecemasan antara Siswa Kelas Ilmu Pengetahuan Alam dan Siswa Kelas Sosial Berdasarkan Faktor Lingkungan Sekolah di Sekolah Menengah Atas *Rintisan Sekolah Bertaraf Internasional*

Abstrak

Latar Belakang: Sekolah Menengah Atas *Rintisan Sekolah Bertaraf Internasional* (SMA RSBI) adalah sekolah menengah atas yang menggunakan standar internasional dalam metode pembelajaran dan kurikulum. Faktor ini dapat menyebabkan kenaikan kecemasan di kalangan siswa, baik bagi siswa kelas Ilmu Pengetahuan Alam dan siswa kelas Ilmu Sosial. Ada tiga faktor yang menyebabkan kecemasan di lingkungan sekolah, yaitu: ketidakpuasan terhadap kurikulum, guru, dan manajemen sekolah.

Metode: Penelitian ini menggunakan desain kohort retrospektif. Subjek dipilih dengan menggunakan metode *convenience sampling*. Tingkat kecemasan siswa kelas Ilmu Pengetahuan Alam (n = 32) dan siswa

Correspondence: Arviana Adamantina Putri, Faculty of Medicine, Universitas Padjadjaran, Jalan Raya Bandung-Sumedang Km.21, Jatinangor, Sumedang, Indonesia, Phone: +6285223880048, Email: p_arviana@yahoo.com

the city of Bandung.⁸

This study was conducted in SMAN 3 Bandung during the period of October to December 2012, with students in grade XII as the study population. The subjects consisted of students of Natural Science Major (n = 32; 56% male, and 44% female), and students of Social Studies Major (n= 14; 29% male and 71% female) who were enrolled in the school during the academic year of 2012–2013 and willing to fill out the questionnaire. Students who were absent at the time of study and those who did not complete the questionnaire were excluded.

This study was an analytic descriptive study with retrospective cohort design. Independent variables of the study were Natural Science or Social Studies students and the environment of SMAN 3 Bandung School. The dependent variable was the anxiety level measured by Taylor Manifest Anxiety Scale (TMAS). The TMAS score of ≤ 9 represents the category of mild anxiety, score of 10–15 represents moderate anxiety, and score of ≥ 16 represents severe anxiety

At the beginning of the study, convenience sampling was used to obtain respondents. The respondents then completed their biodata, informed consent form, TMAS questionnaire, and school evaluation questionnaire, which was a questionnaire to measure the degree of satisfaction towards the school.

Data obtained were then tested using the chi-square method in SPSS 20.0. This study has gained approval from the Ethic Committee of Health Research, Faculty of Medicine, Universitas Padjadjaran.

Results

The results of the TMAS questionnaire completed by the respondents, i.e. 32 Natural Sciences students and 14 Social Studies students, were categorized into not anxious, mild anxiety, moderate anxiety, and severe anxiety with most students, both in the Natural Sciences and Social Studies majors, were assigned to the severe anxiety group (Table 1).

A certain dissatisfaction degree towards factors in the school among students with severe anxiety (Table 2). Of the three factors, the curriculum was the most disliked factor by the majority of students, both from the Natural Sciences major and the Social Studies major. For the other two factors, the level of dissatisfaction was not significant, except for the teacher factor in the Social Studies major, which was quite high.

Table 1 Comparison of Anxiety Levels between Students of Natural Sciences and Social Studies Majors

Majors	Classification of Anxiety Level			Total (%)
	Mild Anxiety	Moderate Anxiety	Severe Anxiety	
	n (%)	n (%)	n (%)	
Natural Sciences	3 (9)	5 (16)	24 (75)	32 (70)
Social Studies	1 (7)	1 (7)	12 (86)	14 (30)
Total	4 (9)	6 (13)	36 (78)	46 (100)

Table 2 Comparison of Satisfaction Level on School Factors between Students of Natural Sciences and Social Studies Majors with Severe Anxiety

		Majors	
		Natural Sciences	S o c i a l Studies
		n (%)	n (%)
Satisfaction towards the Curriculum	Moderate	8(33)	4(33)
	Unsatisfied	15(63)	8(67)
	Very Dissatisfied	1(4)	0(0)
	Total	24(100)	12(100)
Satisfaction towards the Teachers	Satisfied	6(25)	4(33)
	Moderate	18(75)	8(67)
	Dissatisfied	0(0)	0(0)
	Total	24(100)	12(100)
Satisfaction towards the School Management	Satisfied	3(13)	0(0)
	Moderate	20(83)	7(58)
	Dissatisfied	1(4)	5(42)
	Total	24(100)	12(100)

Chi-square test was performed to reveal the significance of the difference between the level of anxiety of the Natural Science students and Social Studies students (Table 3). This test was also used to assess the correlation between anxiety and dissatisfaction towards school factors (Table 4, 5, 6). All test results with $p > 0.05$ were considered insignificant, which was the case in the difference in anxiety level between the students Natural Science and Social Studies majors. The correlation

Table 3 Chi-square Analysis Results on the Difference in Anxiety Level between the Students of Natural Science and Social Studies Majors

Majors	Classification of Anxiety Level		p
	Mild Anxiety + Average Anxiety	Severe Anxiety	
	n(%)	n(%)	
Natural Sciences	8(18)	24(52)	0.69
Social Studies	2(4)	12(26)	
Total	10(22)	36(78)	

Table 4 Chi-square Analysis Results on the Correlation between Anxiety Level and Satisfaction towards Curriculum

Curriculum Factor	Classification of Anxiety Level		p
	Mild Anxiety + Average Anxiety	Severe Anxiety	
	n(%)	n(%)	
Unsatisfied	6(13)	24(52)	0.72
Moderate + Satisfied	4(9)	12(26)	
Total	10(22)	36(78)	

between anxiety and dissatisfaction to the school factors was also unproven in this study.

Discussion

Severe anxiety was experienced by most of the Social Studies students, with 86% of them experienced severe anxiety. Meanwhile, 75% of the Natural Science students experienced severe anxiety. This may be due to the fact that the Social Studies students use more of their right brain, which functions include communication and other social functions. The right prefrontal cortex is the reservoir of anger, anxiety, and fear.^{12,13} Hyperactivity on the right prefrontal cortex can cause imbalance between the two hemispheres, making anxiety harder to manage.¹⁴

Table 5 Chi-square Analysis Results on the Correlation between Anxiety Level and Satisfaction towards Teacher

Teacher Factor	Classification of Anxiety Level		p
	Mild Anxiety + Average Anxiety	Severe Anxiety	
	n(%)	n(%)	
Unsatisfied	2(5)	5(11)	0.63
Moderate + Satisfied	8(17)	31(67)	
Total	10(22)	36(78)	

Table 6 Chi-square Analysis Results on the Correlation between Anxiety Level and Satisfaction towards School Facilities

School Management Factors	Classification of Anxiety Level		p
	Mild Anxiety + Average Anxiety	Severe Anxiety	
	n(%)	n(%)	
Unsatisfied	0(0)	3(6)	1.00
Moderate + Unsatisfied	10(22)	33(72)	
Total	10(22)	36(78)	

Brain is not the only factor that influence anxiety since external factors can also have an important role in the rise of anxiety. One of those factors is the school environmental factors which consist of curriculum, teacher, and school management factors.⁴

Students with severe anxiety from both Natural Sciences and Social Studies majors were dissatisfied with the implemented curriculum. This is due to the target of the curriculum which was too high compared to the average National Exam (Ujian Nasional, UN) target. The learning process that used two different languages, very tight assignments, and high standard of scoring may also create the dissatisfaction.^{4,8} The pressure for students was great and may lead to a feeling of dissatisfaction towards the implemented curriculum, which is also a factor for the rise of anxiety in students. However,

the correlation between the anxiety level and dissatisfaction towards the curriculum had no statistical significance ($p > 0.05$), This can be due to the fact that this was a pilot study and the first one in Bandung City for this topic. The insignificant result of this study can also be due to the sample size that is too small. Ideally, the sample size for this study to represent the situation in Bandung City should be calculated based on the following formula:

$$n = \frac{N}{1 + Ne^2}$$

Information:

n = Sample size

N = Total Population

e = error tolerance (0,05)

According to the formula, the total population size has to be known. There are 4 Senior High Schools with RSBI scheme in Bandung City. The total population of students in the 4 schools was not determined in this study due to the limited time for completing the study, which led to the use of convenience sampling for sample collection.

References

1. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. *Arch Gen Psychiatry*.2003;60(8):837-44.
2. Haryadi D. Perilaku bermasalah remaja muncul lebih dini. 2007. [Cited 2012 April 22]. Available from: <http://wartawarga.gunadarma.ac.id/2010/04/perilaku-bermasalah-remaja-muncul-lebih-dini/>
3. Mighwar A. Psikologi Remaja: petunjuk bagi guru dan orangtua. Bandung: Pustaka Setia; 2006.
4. Astuti ES, Resminingsih. Pelayanan konseling pada satuan pendidikan menengah. Jakarta: Grasindo; 2010.
5. Sadock BJ, Kaplan HI, Sadock VA. Kaplan and Sadock's synopsis of psychiatry. Virginia: Wolter Kluwer/Lippincott Williams & Wilkins; 2008.
6. Kay J, Tasman A. Essentials of psychiatry. Chichester: John Wiley & Sons; 2006.
7. McCance KL, Huether SE, Brashers VL. Pathophysiology: the biological basis for disease in adults and children. Oxford: Elsevier Health Sciences; 2009.
8. Direktorat Jenderal Manajemen Pendidikan Dasar dan Menengah, Direktorat Pembinaan Sekolah Menengah Atas. Panduan penyelenggaraan program rintisan SMA bertaraf internasional. Jakarta: Departemen Pendidikan Nasional; 2009.
9. Brynie FH. Brain sense: the science of the senses and how we process the world around us. New York: American Management Association; 2009.
10. Kalat JW. Biological psychology. Wadsworth: Cengage Learning; 2012
11. Sarwono SW. Psikologi remaja. Jakarta: Raja Grafindo Perkasa; 2011.
12. Fitzgerald MJT, Gruener G, Mtui E. Clinical neuroanatomy and neuroscience. 5th ed. Philadelphia: Saunders Elsevier; 2007.
13. Fuster JM, Bodner M, Kroger JK. Cross-modal and cross-temporal association in neurons of prefrontal cortex. *Nature*. 2000; 405(6784): 347-51
14. Balconi M, Ferrari C. rTMS stimulation on left DLPFC affects emotional cue retrieval as a function of anxiety level and gender. *Depress Anxiety*. 2012 ;29(11):976-82.