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Student Anxiety Level When Going to College in the Mathematics Education Study Program with Mathematics Scores

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Abstrak

Tujuan dari penelitian ini adalah untuk mengetahui gambaran tingkat kecemasan pada mahasiswa Program Studi Pendidikan Matematika (PSPM) UKWMS ketika akan berkuliah di PSPM terhadap nilai matematika di STTB SMA/SMK. Jenis penelitian ini ialah penelitian deskriptif. Subjek penelitian adalah mahasiswa PSPM (Kampus Kota Madiun) UKWMS Angkatan Tahun 2022 sebanyak 7 mahasiswa. Metode pengumpulan data yang digunakan dalam penelitian ini ialah metode kuesioner. Kuesioner yang dibuat adalah kecemasan mahasiswa dalam menghadapi mata pelajaran matematika. Aspek kecemasan yang diteliti adalah aspek fisik, aspek mental, dan aspek perilaku. Metode analisis data dalam penelitian ini ialah statistik deskriptif karena data berupa angka-angka. Data ini berupa skor kecemasan mahasiswa dan nilai matematika di STTB SMA/SMK mahasiswa. Hasil penelitian ini diperoleh rataan skor kecemasan mahasiswa ketika akan berkuliah di PSPM berdasarkan aspek fisik sebesar 42,43 (kriteria tingkat kecemasan sedang), aspek mental sebesar 42,29 (kriteria tingkat kecemasan sedang), dan aspek perilaku sebesar 39,43 (kriteria tingkat kecemasan rendah). Secara keseluruhan rataan skor kecemasan mahasiswa ketika akan berkuliah di PSPM sebesar 124,14 (kriteria tingkat kecemasan sedang). Sedangkan rataan nilai matematika mahasiswa di STTB SMA/SMK sebesar 84,91.
Kata Kunci: Aspek Fisik; Aspek Mental; Aspek Perilaku; Kecemasan Mahasiswa; Nilai Matematika.

Abstract

The purpose of this study is to determine the level of anxiety in students of the UKWMS Mathematics Education Study Program (PSPM) when going to study at PSPM mathematics grades in the high school/vocational school STTB. This type of research is descriptive. The research subjects were 7 MESP (Madiun City Campus) WMSCU Class of 2022 students. The data collection method used in this research is the questionnaire method. The questionnaire made is about student anxiety in facing math subjects. The aspects of anxiety studied are physical, mental, and behavioral. The data analysis method in this research is descriptive statistics because the data is in the form of numbers. This data is in the form of student anxiety scores and math scores in the STTB SMA / SMK students. The results of this study obtained an average student anxiety score when going to college at PSPM based on physical aspects of 42.43 (moderate anxiety level criteria), mental aspects of 42.29 (moderate anxiety level criteria), and behavioral aspects of 39.43 (low anxiety level criteria). Overall, the average score of student anxiety when studying at PSPM is 124.14 (moderate anxiety level criteria). Meanwhile, the average student's mathematics score at the high /vocational school STTB is 84.91.
Keywords: Physical Aspects; Mental Aspects; Behavioral Aspects; Student Anxiety; Mathematics Score.

I. INTRODUCTION

Mathematics is one of the most important sciences for humans. Many things around humans are related to mathematics, such as buying and selling an item, calculating height, calculating weight, and many more. In everyday life, the role of math is significant (Rohmah, Rosita, Fatimah, & Wahyuni, 2023). Many branches of science are based on mathematics. Without the help of mathematics, it is possible to achieve progress in natural science, technology, computers, and various other fields, not as fast as today's developments (Sari & Yulia, 2023). From this, mathematics has a role in human life, science, and technology (Al-Qonuni & Afriansyah, 2023). This follows the opinion of Salinas et al. (2019), who stated that Mathematics is one subject that pervades life at any age, in any circumstance. Thus, its value goes beyond the classroom and in the school.

One of the basics of mathematics that everyone needs to master is basic arithmetic, including addition, subtraction, multiplication, and division. The basic math terminology used must be precise and precise (Pratami, Sundayana, & Sofyan, 2023). Therefore, given the importance of mathematics in everyday life, it is expected that a person, especially students, can improve their ability to learn mathematics in formal education by using basic mathematical concepts that are correct and precise. Based on researcher observation, there are still many students who complain when following or learning math at school and in college. Students still think math is scary. Just hearing the word "math" can make some students turn pale, get a stomachache, tremble, or break out in a cold sweat. Math is considered a monster. When taking math lessons, students feel anxious, anxious, and restless, which can affect these feelings and decrease their mathematics ability, as evidenced by their inability. The same thing was reported by Wijayanti (2000); indeed, some students now consider mathematics a problematic subject, and learning it requires a willingness, ability, and intelligence, but there are still many. Therefore, many students are not good at math and try to avoid numbers and number operations as much as possible. Math lessons are still seen as a terrible scourge (Wijaya & Yusup, 2023).

Researchers argue that the view of math as a terrible scourge for students is due to many factors that influence students' perceptions of math as a complex subject, including:

1. This may be due to the learning that the teacher uses when providing math material.
2. It is possible because the teacher's mindset assumes that the teacher knows the most about math, not the students.
3. This is possible because of the high curriculum load in Indonesia.
4. This is possible because teachers are dictated by the imposed curriculum and

the minimum completion standards that schools aim to achieve.

5. This is possible due to the mindset of the past and present society, even the previous Indonesian education system, which used minimum grades as a requirement to pass exams such as the national school exam.
6. This is possible because the method of solving the problem must follow the technique taught by the teacher. This inhibits students' creativity because the method of solving problems must follow the technique taught by the teacher.
7. This is possible because the teacher considers the most appropriate and correct way of solving mathematics, and the teacher needs to be more creative in finding other ways of solving mathematics.

The above assumptions about mathematics allow the emergence of anxiety in students towards mathematics. Anxiety is a state of apprehension or worry in someone who complains that something terrible is about to happen (Nevid et al., 2005; Zay & Kurniasih, 2023). Anxiety can arise from the process of mixed emotions when someone is experiencing emotional distress and inner conflict (Tamba & Bermuli, 2023). Learners who experience math anxiety will show various emotional responses when faced with numbers-related problems. These emotional responses include physical, mental, and behavioral aspects, according to Nevid et al. (2005); on the physical aspects, indicators: include difficulty breathing, heart palpitations, and dizziness; indigestion, sleep disorders, eating disorders, and facial expressions; on the mental aspects, indicators: affective and cognitive, while in the Behavioral aspects, indicators: avoidance, clinging and dependence, shaken and neurotic movements (Rahayu, Liddini, & Maarif, 2022).

The Mathematics Education Study Program (MESP) is one of the study programs of Widya Mandala Surabaya Catholic University (WMSCU) located at the Madiun City Campus, which has been running since 1986. MESP organizes an educational process that produces Mathematics Education graduates who are superior and relevant to the job market's needs, able to innovate in mathematics learning, collaborate with academic institutions, and conduct research and study activities in the context of developing Mathematics Education. The curriculum applied at the MESP undergraduate level (S1) contains general subjects, education, learning, and mathematics. Of course, the curriculum programmed by MESP has a dominant mathematics course content compared to teaching, learning, and other subjects. So that students who study at MESP have good math skills. However, not all MESP students have good math skills. This is because prospective students who enter MESP are not strictly selected to be

accepted as students. Prospective MESP students can come from various high school origins (science and social studies majors). They can come from various vocational schools (both exact vocational and social majors), resulting in prospective students entering MESP with diverse mathematics abilities. For prospective students who have good math skills, of course, when they will or are studying mathematics, they will learn happily and not experience anxiety in learning mathematics (Kusmaryono & Ulia, 2020). However, for prospective students who have poor math skills, it would be expected that when they will or are studying mathematics, they will experience anxiety in learning mathematics. Based on the description above, the researcher conducted a study to know the level of anxiety in students of the Mathematics Education Study Program (Madiun City Campus) WMSCU when going to study at MESP mathematics grades in high school/vocational school STTB.

II. METHOD

This type of research is descriptive research, which is conducted to provide an overview of one object under study through sample or population data by analyzing data and making generally applicable conclusions (Sugiyono, 2019). Based on this theory, this study uses quantitative data, namely data obtained through analysis of the subject's answer score on the scale as it is. The purpose of this study is to describe the anxiety level in WMSCU students when going to study WMSCU toward the high school STTB math score. The subjects for this study are students of MESP (Madiun City Campus) WMSCU Class of 2022. The MESP students totaled seven students consisting of 6 women and one man from high school, as many as five people, and vocational schools, as many as two people.

The data collection method used in this study is the questionnaire method. The questionnaire was made about student anxiety in facing math subjects. The questionnaires were arranged based on aspects of anxiety, namely physical, mental, and behavioral aspects. This questionnaire is 60 statement items, consisting of 31 favorable and 29 unfavorable items, with each aspect as many as 20 statement items. The scale used is a Likert scale consisting of 4 (four) answer categories with the lowest score of 1 and the highest score of 4.

The data analysis method in this research is descriptive statistics because the data is in the form of numbers. This data is in the form of student anxiety scores and mathematics scores on students' high school/vocational high school STTB. The criteria for anxiety level, both per aspect and overall, are divided

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into three categories: low, medium, and high. The score limit for each category is determined by calculating the maximum score minus the minimum score, then dividing by 3. The results of determining the criteria category are presented in the following table:

Table 1.
Criteria For Student Anxiety Level

Student Anxiety Score Interval per Aspect	Student Anxiety Score Interval (overall)	Student Anxiety Level Criteria
20 ≤ anxiety score per aspect < 40	60 ≤ anxiety score < 120	Low
40 ≤ anxiety score per aspect < 60	120 ≤ anxiety score < 180	Medium
60 ≤ anxiety score per aspect ≤ 80	180 ≤ anxiety score ≤ 240	High

III. RESULT AND DISCUSSION

A. Description of research results

After the researchers distributed questionnaires to MESP students and the data was obtained, the data was processed. The results of data processing are presented in the following table:

Table 2.
Anxiety Score Student per Aspects

Subject Code (From School)	Anxiety Score Student		
	Physical Aspects	Mental Aspects	Behavioral Aspects
S1 (SMA)	39	36	35
S2 (SMK)	47	44	44
S3 (SMA)	43	46	41
S4 (SMA)	34	35	35
S5 (SMA)	45	44	37
S6 (SMK)	47	48	41
S7 (SMA)	42	43	43
Smallest Score	34	35	35
Largest Score	47	48	44
Mean Score	42,43	42,29	39,43
Standard Deviation	4,69	4,92	3,74

Table 3.
Anxiety Score Student and Mathematics Score in STTB High School Students

Subject Code (From School)	Anxiety Score Student	Mathematics Score in STTB Student
	Total Score	
S1 (SMA)	110	87,29
S2 (SMK)	135	80,46
S3 (SMA)	130	89,57
S4 (SMA)	104	85,00
S5 (SMA)	126	83,00
S6 (SMK)	136	79,00
S7 (SMA)	128	90,04
Smallest Score	104	79,00
Largest Score	136	90,04
Mean Score	124,14	84,91

Standard Deviation	12,36	4,32

Table 4.
Criteria For Student Anxiety Level per Aspects and Overall

Subject Code	Anxiety Level			
	Physical Aspects	Mental Aspects	Behavioral Aspects	Total Score
S1	Low	Low	Low	Low
S2	Medium	Medium	Medium	Medium
S3	Medium	Medium	Medium	Medium
S4	Low	Low	Low	Low
S5	Medium	Medium	Low	Medium
S6	Medium	Medium	Medium	Medium
S7	Medium	Medium	Medium	Medium
Mean Score	Medium	Medium	Low	Medium

Table 5.
Recapitulation of Student Anxiety Level Criteria

Category Student Anxiety Level	Physical Aspects		Mental Aspects		Behavioral Aspects		Total Score	
	N	%	N	%	N	%	N	%
Low	2	28,57	2	28,57	3	42,86	2	28,57
Medium	5	71,43	5	71,43	4	57,14	5	71,43
High	0	0	0	0	0	0	0	0

Based on the processed data, the results of this study can be described as follows:

a. on the physical aspect (see Table 2) has the smallest score of 34, the most significant score of 47, and an average of 42.43 with a standard deviation of 4.69. They were referring to Table 1, that the average score (= 42.43) on this physical aspect is included in the criteria for moderate anxiety level. The distribution of anxiety levels (see Table 5) in physical aspects is two students (28.57%) experiencing physical anxiety in the low category, five students (71.43%) experiencing physical anxiety in the medium category, and no students (0%) experiencing physical anxiety in the high category. Based on this data, most MESP students experience physical anxiety in the moderate category. This means that most students in this study have a moderate level of anxiety in physical anxiety when students study at MESP.
b. on the mental aspect (see Table 2) has the smallest score of 35, the most significant score of 48, and an average of 42.29 with a standard deviation of 4.92. Referring to Table 1 that the average score (= 42.29) on this mental aspect is included in the criteria for moderate anxiety level. The distribution of anxiety levels (see Table 5) in mental

aspects is two students (28.57%) experiencing mental anxiety in the low category, five students (71.43%) experiencing mental anxiety in the medium category, and no students (0%) experiencing mental anxiety in the high category. Based on this data, it appears that most MESP students experience mental anxiety in the moderate category. This means that most students in this study have a moderate level of anxiety in mental anxiety when students study at MESP.

c. in the behavioral aspect (see Table 2) has the smallest score of 35, the most significant score of 44, and an average of 39.43 with a standard deviation of 3.74. Referring to Table 1 that the average score (= 39.43) in this behavioral aspect is included in the low anxiety level criteria. The distribution of anxiety levels (see Table 5) in behavioral aspects is three students (42.86%) experiencing behavioral anxiety in the low category, four students (57.14%) experiencing behavioral anxiety in the medium category, and no students (0%) experiencing behavioral anxiety in the high category. Based on these data, it appears that most MESP students experience behavioral anxiety in the moderate category. This means that some students in this study have a moderate level of anxiety in behavioral anxiety when students study at MESP.
d. overall student anxiety when going to college in the Mathematics Education Study Program (MESP) (see Table 2) has the smallest score of 104, the most significant score of 136, and an average of 124.14 with a standard deviation of 12.36. Referring to Table 1 that the average score (= 124.14) is included in the criteria for moderate anxiety level. The distribution of anxiety levels (see Table 5) is two students (28.57%) experiencing anxiety in the low category, five students (71.43%) experiencing anxiety in the medium category, and no students (0%) experiencing anxiety in the high category. Based on these data, most MESP students experience anxiety in the moderate category. This means that most students in this study have a moderate anxiety level when studying at MESP.
e. on the mathematics score in the student's high school/vocational school STTB (see table 3), the smallest value is 79.00, the most significant value is 89.57, and the average is 84.91 with a standard deviation of 4.32.

B. Discussion

Anxiety is a common thing that is described as a feeling of discomfort towards a cause of anxiety. Anxiety is a psychological and physiological state characterized by somatic, emotional, and behavioral components. These components create an unpleasant feeling usually associated with anxiety, worry, or

fear (Dzulfikar, 2013). This somatic component relates to the physical aspect of a person, the emotional component relates to the mental aspect of a person, and the behavioral component relates to the behavioral aspect of a person.

Symptoms of someone experiencing physical anxiety can be difficulty breathing, heart palpitations, indigestion, sleep disorders, eating disorders, and facial expressions, such as anxiety or nervousness. For symptoms of someone experiencing anxiety in the mental aspect, it can be effective, such as tension, anxiety, unrest, or over-sensitivity, and cognitive, such as difficulty concentrating, difficulty making decisions, uncontrollable thinking, confused thinking, or repetitive distracted thinking. In comparison, the symptoms of someone experiencing anxiety in the behavioral aspect can be avoidance, clinging and dependence, being shaken, or making neurotic movements, such as breaking fingernails and clearing their throat. These aspects of anxiety will be observed in MESP students when going to studying at MESP.

Everyone will experience anxiety. Anxiety has different levels in each person and, of course, will impact that person. The impact of this anxiety makes a person feel uncomfortable and lack concentration. As stated by Shiraev & Levy (2016), common anxiety disorders in various cultures include the first body syndrome, which appears in the form of fatigue, lack of concentration, and muscle tension. Second, psychological syndromes appear as protracted anxiety about specific performances or social activities. Another impact of anxiety can also make a person experience fear, worry, and anxiety. As revealed by Jarnawi (2020), unreasonable fear, worry, and anxiety ultimately present anxiety, and this anxiety will undoubtedly have an impact on behavioral changes, such as: withdrawing from the environment, difficulty focusing on activities, difficulty eating, irritability, low emotional control of anger, sensitive, illogical, insomnia. Sometimes it will also be born in psychosomatic disorders such as skin allergies, shortness of breath, racing heart, cold sweats, and nausea. If not treated quickly, these disorders can damage a person's life to achieve a happy life in this world and the hereafter.

The disorders that occur in the above anxiety in students or college students, such as feeling uncomfortable and lack of concentration, will undoubtedly affect their learning outcomes, especially math learning outcomes. Anxiety is one of the factors most often found in the learning process, especially in math lessons. This view arises because one of the characteristics of mathematics is abstract. Undeniably, many students dislike mathematics because they consider it a complicated subject, the material studied

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in mathematics contains numbers, and too many mathematical formulas must be memorized. In addition, students are also required to get good math learning results. As a result, students will experience anxiety, discomfort, and lack of concentration, which in turn, students experience anxiety. So a dilemma arises, if this anxiety is not managed correctly, it will result in math learning outcomes resulting in poor grades. This is what wants to be researched related to the anxiety of MESP students when studying at MESP. MESP students who are the subject of this research are MESP students in class 2022. For MESP students' anxiety when studying at MESP, it will be obtained from student anxiety before choosing or registering to study at MESP, and math learning outcomes are taken from the mathematics scores on the STTB student's high MESP will be connected between the scores of anxieties of MESP students when going to study at MESP and the mathematics scores in high school/vocational school STTB.

Based on the results of descriptive analysis of student anxiety data when going to college at MESP (see table 2), it is obtained that the average student anxiety in the physical aspect is 42.43 (medium anxiety level criteria), the average student anxiety in the mental aspect is 42.29 (medium e anxiety level criteria), and the average student anxiety in the behavioral aspect is 39.43 (low anxiety level criteria). Overall, students' average anxiety when studying at MESP (see Table 3) is 124.14 (medium anxiety level criteria). This means that students attending MESP college have medium anxiety and tend to be close to low. It is said that students when going to college at MESP have anxiety that is close to low because the anxiety score obtained is close to the limit score between the criteria for low anxiety level and the criteria for medium anxiety level, which is 40 (based on per aspect) or 120 (overall) (see table 1). Even the behavioral aspect of anxiety has low anxiety.

Students' anxiety when going to study at MESP in the physical aspect with the criteria for this medium anxiety level and based on the scores of items filled out by students show that: when going to choose MESP as an undergraduate study, students do not feel it will be difficult to breathe, the heart beats as usual, the fingers or limbs remain at average temperature, and students also do not get dizzy. In addition, students do not feel excessive indigestion or digestion according to what students experienced before, do not feel stomach pain or nausea, urinate as usual, and also do not experience diarrhea students desire to study undergraduate at MESP. Another thing that is experienced is that students can sleep well, do not experience sleep disorders in the form of insomnia or nightmares, and have a good appetite. However, feelings of anxiety and nervousness will be felt by students in choosing to study at MESP as a form of facial expression. This feeling is natural

because students will start a new experience in continuing their studies at MESP.

Student anxiety when going to study at MESP in the mental aspect with the criteria for this medium level of anxiety and based on the scores of items filled out by students shows that: when going to choose MESP as an undergraduate study, affective students still feel tension, anxiety (worry) because they will start a new experience in continuing their studies at MESP. However, students do not feel uncertainty, irritability, insecurity, sadness, and fear. Cognitively, based on students' experience while studying at school and participating in mathematics learning in class, students have no difficulty concentrating well and can make decisions well, control their minds, think everything can be solved, and eliminate distracting thoughts.

Student anxiety when going to study at MESP in the behavioral aspect with this low anxiety level criterion and based on the score of the items filled in by students shows that: when going to choose MESP as an undergraduate study and based on the student experience of the student experience while studying at school and following mathematics learning in class, students do not do things leaving class, will not cheat, do not feel shaken and do not make neurotic movements such as clearing their throat. Thus, based on physical aspect anxiety, mental aspect anxiety, and behavioral aspect anxiety, student anxiety can be obtained when going to college at MESP with moderate anxiety level criteria.

If the results of student anxiety when going to college at MESP are related to the value of mathematics in the STTB students with student anxiety scores (see table 3) can be seen in the following Figure 1:

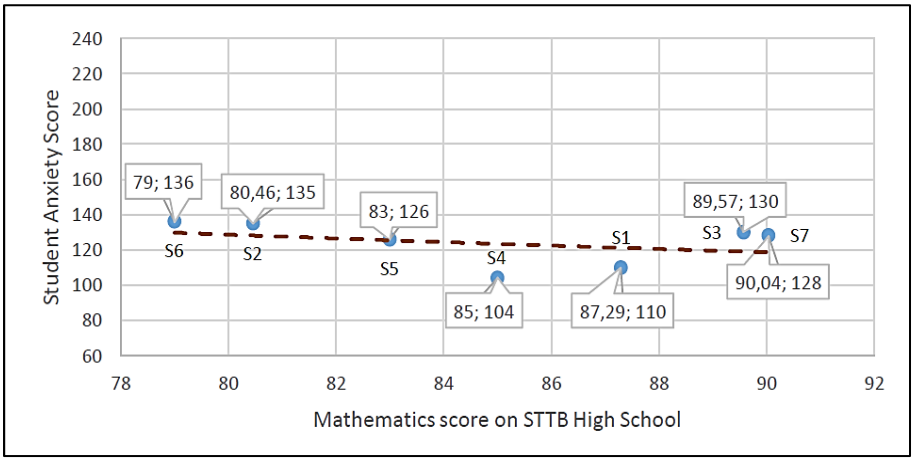

Figure 1. Students' Anxiety When Going to Study at MESP with Math Score

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Based on Table 3 and Graph 1, considering students' anxiety scores with math scores, it can be seen that two subjects have the lowest math scores with the highest student anxiety scores, namely subject S2 (80.46; 135) and subject S6 (79; 136). While other subjects (S1, S3, S4, S5, S7) with higher math scores than the math scores of subject S2 and subject S6 and have lower math anxiety scores than the math anxiety scores of subject S2 and subject S6 (see Graph 1). This indicates that researchers suspect a relationship between student anxiety and math scores.

The relationship between students' anxiety and students' math scores/results has been widely discussed in various studies, among others:

1. The results of research conducted by Syafri (2017), one of the conclusions is that math anxiety has a very negative effect on learning outcomes/learning achievements, and mathematics affects students' mathematical abilities.
2. The results of research conducted by Riski et al. (2019) showed a negative relationship between math anxiety and math problem-solving ability, which means that the higher the student's anxiety level, the lower the problem-solving ability.
3. The results of research conducted by Giriansyah & Pujiastuti (2021) show a negative relationship between math anxiety and math learning achievement. This means the higher the math anxiety, the lower the student's math learning achievement. Furthermore, vice versa, the lower the math anxiety, the higher the learning achievement obtained by students.

Referring to the various research results above and from the results of this study, it can be obtained that students' anxiety scores when studying at MESP have a negative relationship with math scores in high school STTB.

Because student anxiety gives a negative meaning to mathematics scores, an effort is needed so that the anxiety experienced by students toward mathematics is minimized. Anxiety is always present in a person and cannot be eliminated but can be minimized. Many things must be done by looking at the point of view that mathematics is a difficult lesson, an abstract lesson, and many formulas that are difficult to memorize, which can minimize this anxiety to get a good mathematics score, namely according to Woodard (Auliya, 2016), suggesting several techniques that can be used to reduce mathematics anxiety, including:

1. Creating a conducive environment for learning math, which makes students not feel threatened but feel happy, calm, and relaxed,
2. Using cooperative groups can help learners to understand the problem because they feel that their other friends also have the same problem,
3. Teaching slowly can help learners understand the material better,

4. Providing additional learning so that no learner is left behind academically.

IV. Conclusion

Based on the research results and discussion, it can be concluded that the level of anxiety of students when going to study at MESP is at the criteria for medium anxiety level, with details of the level of anxiety of students in the physical aspect and mental aspect, while the level of anxiety of students in the behavioral aspect at the criteria for low anxiety level. Moreover, there is a negative relationship between the anxiety score of students when going to college at MESP with high school STTB math scores.

The results of this study can provide the following recommendations for educators, in general, to always pay attention and maintain the psychological emotions of students, especially their anxiety levels, to remain stable in the lessons or mathematics material delivered so as not to affect the poor productivity of logical thinking in solving problems, such as the friendly and pleasant attitude of educators and the nature of the material that suits their abilities and does not burden students.

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