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Mathematics Anxiety and Learning Interest Among Sharia Economics Students: A Gender-Based Analysis in Indonesian Higher Education

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Abstract

Mathematics education in Indonesia continues to face persistent challenges, particularly concerning student anxiety and engagement. While prior studies have extensively explored the math anxiety on academic performance, investigations at the higher education level remain limited. This study explores the relationship between math anxiety and learning interest, specifically focusing on gender differences among students in the Sharia Economics Program at STAI Sangatta, East Kutai. Adopting a quantitative approach, data were collected from 72 students via a digital questionnaire comprising 30 items measuring anxiety and 15 assessing interest in mathematics, all rated on a four-point Likert scale. The Pearson correlation analysis revealed a moderate but statistically insignificant positive correlation for male students (r = 0.431), and a strong, statistically significant positive correlation for female students (r = 0.750). These findings suggest that higher anxiety levels may be linked to increased motivation to learn mathematics among female students. This perspective challenges the conventional belief that academic anxiety is solely detrimental. The study emphasizes the need for integrated strategies that address both emotional and motivational aspects of learning. It advocates for gender-sensitive teaching methods and inclusive educational practices, particularly in disciplines like Sharia Economics, where mathematical proficiency is essential for academic and professional success.

Keywords Gender; Higher Education; Mathematics Anxiety; Student Interest

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1. INTRODUCTION

Mathematics education in Indonesia has been formally provided from kindergarten to Higher Education. Throughout the implementation of mathematics learning—both in terms of process and outcomes—numerous difficulties and barriers arise, inevitably affecting the attainment of educational goals. Sometimes, these obstacles can originate from the students themselves, their environment, or even from mathematics itself, which is commonly perceived as a difficult subject (Saputra, 2014); (Gunardi, 2020); (Marhadi Saputro, Yadi Ardiawan, 2015); (Mbagho & Tupen, 2020). One of the significant challenges in learning mathematics is the presence of mathematics anxiety (Amelia & Ulfah, 2022); (Pramudya & Safrul, 2022), as highlighted by Himmi and Azmi, along with students' readiness to learn the subject (Himmi & Azni, 2017).

Mathematics anxiety refers to feelings of unease triggered by emotional distress, often marked by fear, nervousness, tension, and worry when encountering challenging or unwelcome tasks in mathematics learning (Wahyudy et al., 2019). Anxiety, in general, is a human response that accumulates in reaction to perceived threats or danger. Moss emphasized that in every instance of anxiety, there are perceptions and thought processes concerning the danger, coupled with physiological activation of alarm systems (Luthfiyah & Hadi, 2021). Similarly, Atkinson et al. described anxiety as an unpleasant feeling characterized by worry, concern, and fear, which individuals may experience at varying levels (Luthfiyah & Hadi, 2021). Tobian also noted that feeling anxious or stressed about mathematics can hinder an individual's ability to concentrate and perform effectively when dealing with numerical operations and problem-solving, whether in academic contexts or daily life, and this condition often erodes self-confidence (Saputra, 2014). Accordingly, mathematics anxiety can be defined as a sense of discomfort accompanied by worry, tension, fear, and insecurity when engaging with mathematics learning—whether partially or wholly—often stemming from negative experiences in one's environment.

In addition to anxiety, another major factor that hinders success in mathematics is the lack of interest or motivation. Interest plays a crucial role in learning, as it drives individuals to focus and engage meaningfully with a subject. A lack of interest can prevent students from achieving their optimal potential despite having the necessary abilities (Sholehah et al., 2018). Developing a genuine interest enhances the depth of understanding of mathematical concepts (Komariyah et al., 2018) and is positively correlated with improved academic performance (Y. Wijaya, 2021).

This study is grounded in two major theoretical perspectives to provide a stronger analytical foundation. First, the State-Trait Anxiety Theory proposed by Spielberger (1985) explains mathematics anxiety as a combination of situational (state) and dispositional (trait) responses that influence students' emotional reactions when facing mathematical tasks. Second, the Expectancy-Value Theory of Eccles and Wigfield (2002) highlights the role of interest and motivation in learning outcomes, where students' engagement with mathematics is shaped by their expectations of success and the value they assign to the subject. By integrating these theories, the present study examines the relationship between mathematics anxiety and learning interest among Sharia Economics students in Indonesian higher education through a gender-based lens, using Pearson correlation analysis as the primary method.

Previous studies have examined mathematics anxiety concerning various variables, including academic achievement, interest in mathematics learning, reasoning ability, and motivational factors. Himmi and Azni, for instance, investigated the correlation between learning readiness and mathematics anxiety, finding that students with higher readiness and lower anxiety achieved better academic outcomes (Himmi & Azni, 2017). Meanwhile, Amelia and Ulfah explored the relationship between mathematics anxiety and reasoning ability in the context of online learning. They concluded that mathematics anxiety did not significantly affect students' mathematical reasoning skills (Amelia & Ulfah, 2022). Similarly, Lisma, Ramadhani, and Siregar (2019) examined mathematics anxiety and motivational aspects, providing important insights into how these variables influence learners' mathematical achievement. Several other studies also investigated mathematics anxiety concerning learning interest and achievement at the elementary and secondary school levels (Y. Wijaya, 2021; Rina et al., 2021; Prastika, 2020; Lisma et al., 2019).

Although these studies have offered valuable contributions, several research gaps remain. First, most existing research has been conducted at the elementary and secondary school levels, leaving limited evidence on whether mathematics anxiety is associated with learning interest in higher education settings. Second, previous studies primarily focused on mathematics anxiety concerning achievement or reasoning. At the same time, fewer have directly examined its correlation with learning interest, which strongly determines students' engagement and persistence in learning. Third, very few studies have addressed this issue within the specific context of Sharia Economics students, who come from diverse educational backgrounds yet are required to apply mathematical skills in solving

economics-related problems. Finally, the role of gender as a moderating factor in the relationship between mathematics anxiety and learning interest has received little attention in earlier research.

Therefore, this study addresses these gaps by investigating the relationship between mathematics anxiety and learning interest among Sharia Economics students at STAI Sangatta East Kutai. By incorporating a gender-based analysis, this research provides new insights into how mathematics anxiety influences students' learning interest in higher education and contributes to the broader discourse on enhancing mathematics learning experiences in Islamic Economics education.

2. METHODS

A quantitative methodology was applied in this study, specifically employing a survey method with correlational analysis. According to Hadi et al., correlational analysis is used to utilized to explore how two or more variables are connected (Y. Wijaya, 2021); (Karimuddin Abdullah et al., 2022), a perspective also supported by Utama et al (Berutu & Tambunan, 2018). The research population included students currently attending the odd semester in the Sharia Economics Program at Sekolah Tinggi Ilmu Agama, with the requirement that they had completed the Economic Mathematics course (STAI) Sangatta, East Kutai, comprising a total of 72 students. The variables examined were mathematics anxiety and interest in learning mathematics.

Non-test instruments, including questionnaires and documentation, were used for data collection. The questionnaire consisted of 30 statements on mathematics anxiety and 15 on interest in learning mathematics. Respondents selected one of four options for each item. Responses were collected using a structured scale consisting of four levels of agreement, beginning with 'Strongly Agree' and ending with 'Strongly Disagree. The analytical procedures were conducted through the use of Microsoft Excel. Upon completion of the instrument's validity and reliability evaluation, data collection was conducted digitally by sharing the questionnaire via Google Forms. The data collected from the questionnaires on mathematics anxiety and learning interest were then scored based on the method outlined by Manulu et al.(Aulia et al., 2021). The scoring system used is as follows:

Following the instrument testing, a series of prerequisite analyses were performed to ensure the validity of the correlation analysis. First, a normality test was conducted to examine whether the data for each variable were normally distributed. The normality of the data was assessed using the Kolmogorov-Smirnov test and complemented by skewness and kurtosis values to confirm distributional assumptions. Second, a linearity test was carried out to determine whether the relationship between mathematics anxiety and learning interest was linear, as linearity is a fundamental assumption of Pearson's correlation. The main analysis was conducted only after confirming that both assumptions were met.

The core statistical test employed was the Pearson Product-Moment Correlation, which measures the strength and direction of the linear relationship between mathematics anxiety and learning interest. To capture possible variations based on gender, the correlation analysis was conducted separately for male and female respondents. The comparative results were then interpreted to highlight similarities and differences between the two groups, thereby providing a more comprehensive understanding of the relationship under study.

3. FINDINGS AND DISCUSSIONS

Findings

The anxiety-related items were developed by referring to and adapting the opinions of Nolen-Hoeksema et al. (Safiyah, 2020) and the instrument by Putri et al. (Putri et al., 2020). This outlines several

indicators of anxiety. The total number of items is 30, consisting of positive and negative statements. Meanwhile, the instrument of interest in learning mathematics was developed by referring to and adapting the opinions of Tafonao (Tafonao, 2018) and (Nugroho et al., 2020). All items in the instrument regarding interest in learning mathematics are positive statements.

Before conducting the validity and reliability tests, the data-originally in ordinal form, were converted to interval-scale data by applying the Successive Interval Method. To obtain trustworthy results, it is important first to verify that the instrument used produces valid and reliable data. The outcomes of validity and reliability assessments are presented as follows:

Table 1. Item Validity of the Mathematics Learning Anxiety Scale

Item Number	Calculated *r*-Value	*r* -Table (5% Significance Level)	Validity Status	
			Valid	Invalid
1	0,516	0,456	√	
2	0,57	0,456	√	
3	0,768	0,456	√	
4	0,497	0,456	√	
5	0,798	0,456	√	
6	0,663	0,456	√	
7	0,517	0,456	√	
8	0,405	0,456		√
9	0,845	0,456	√	
10	0,819	0,456	√	
11	0,832	0,456	√	
12	0,766	0,456	√	
13	0,708	0,456	√	
14	0,585	0,456	√	
15	0,757	0,456	√	
16	0,274	0,456		√
17	0,53	0,456	√	
18	0,572	0,456	√	
19	0,477	0,456	√	
20	0,791	0,456	√	
21	0,54	0,456	√	
22	-0,04	0,456		√
23	0,561	0,456	√	
24	0,769	0,456	√	
25	0,852	0,456	√	
26	0,802	0,456	√	
27	0,678	0,456	√	

Item Number	Calculated *r*-Value	*r* -Table (5% Significance Level)	Validity Status	
			Valid	Invalid
28	0,739	0,456	√	
29	0,355	0,456		√
30	0,45	0,456		√

As shown in Table 1, five items have been identified as invalid, namely items 8, 16, 22, 29, and 30, indicating insignificance, as the computed *r*-value does not surpass the reference value from the *r*-table. Therefore, the items used in the mathematics anxiety variable are 25 valid statements. After reviewing the invalid items, the researcher believes there is no need to revise or take action to address the invalid items. The invalid items can be removed directly, as other valid items already represent them.

Table 2. Validity Items of Interest in Learning Mathematics

Item Number	Calculated *r*-Value	*r* -Table (5% Significance Level)	Validity Status	
			Valid	Invalid
1	0,355	0,456		√
2	0,608	0,456	√	
3	0,636	0,456	√	
4	0,599	0,456	√	
5	0,786	0,456	√	
6	0,459	0,456	√	
7	0,498	0,456	√	
8	0,673	0,456	√	
9	0,680	0,456	√	
10	0,691	0,456	√	
11	0,602	0,456	√	
12	0,466	0,456	√	
13	0,708	0,456	√	
14	0,817	0,456	√	
15	0,598	0,456	√	

There is one invalid item in the instrument regarding interest in learning, but other items have already represented it, so the final instrument consists of 14 valid items.

After the validity test of the instrument, the next step was to conduct a reliability test for each variable, with the following results:

Table 3. Instrument Reliability

Instrument Variable	Calculated *r*-Value	*r*-table (5% Significance Level)	Reliability Status
Anxiety in Learning Mathematics	0,943	0,456	Reliable
Interest in Learning Mathematics	0,877	0,456	Reliable

The results confirm that the measurement tool utilized in this research fulfills the required reliability criteria, as the calculated *r*-value exceeds the critical value from the *r*-table.

Following the reliability analysis, prerequisite tests were performed. The normality test determined whether the research data were normally distributed. The results are summarized in the table below:

Table 4. Normality Test Results

Variable	Kolmogorov-Smirnov Sig.	Distribution Status
Anxiety in Learning Mathematics	0.200	Normal
Interest in Learning Mathematics	0.128	Normal

As shown in Table 4, both variables have significance values greater than 0.05, indicating that the data are normally distributed. These results confirm that the assumption of normality required for correlation analysis is satisfied.

Scatter plot diagrams were generated to illustrate the data distribution visually to support the normality test results further.

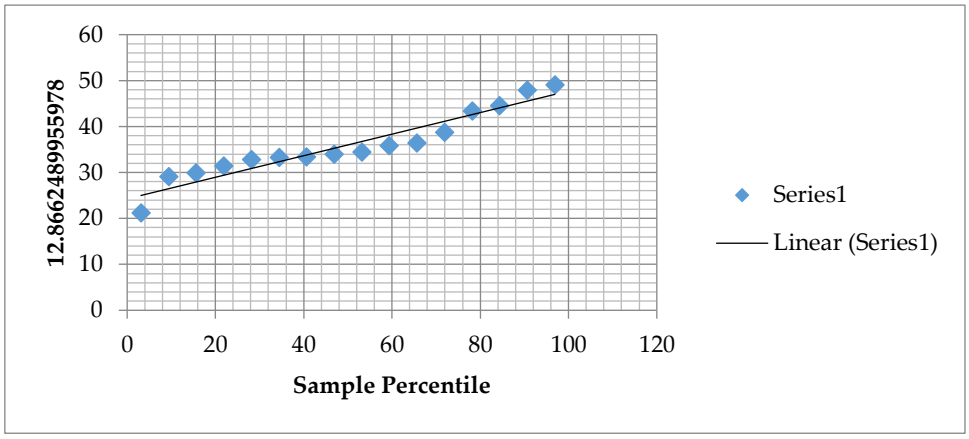

Figure 1. Distribution of Male Respondents' Data Using a Scatter Plot Diagram

As shown in Figure 1, the data points tend to cluster near the diagonal, suggesting a strong alignment with the expected distribution. It is evident from the analysis that the distribution of data for male respondents meets the criteria for normality.

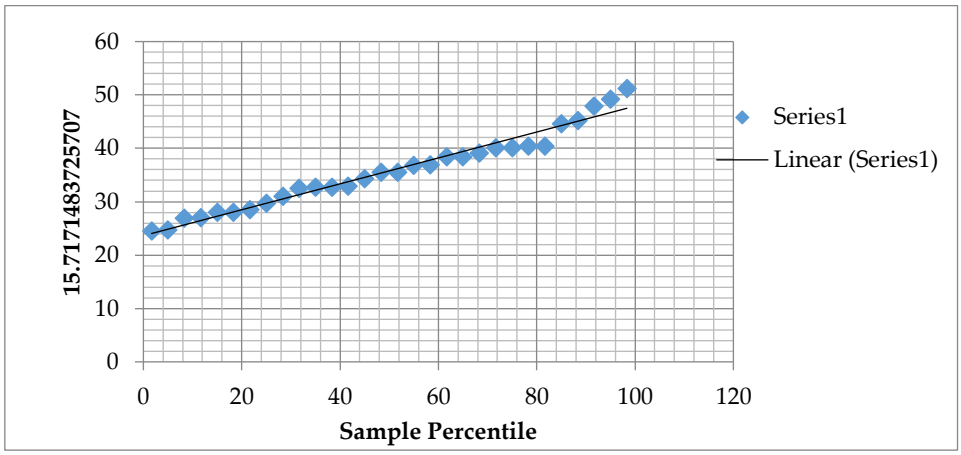

Figure 2. Distribution of Female Respondents' Data Using a Scatter Plot Diagram

As seen in Figure 2, the distribution of data points closely follows the diagonal line, reflecting consistency with the reference trend, suggesting a normal distribution of responses from female participants. Thus, the normality assumption has been met, and the correlation analysis can be carried out.

After fulfilling the prerequisite tests, the Pearson Product-Moment Correlation test analyzed the data. The correlation analysis was conducted separately for male and female respondents. The results are presented below:

Table 5. Pearson Bivariate Correlation Test (X = Mathematics Anxiety, Y = Learning Interest)

Respondents	Variables	Pearson Correlation (r)	Sig. (2-tailed)	N
Male	X – Mathematics Anxiety ⇿ Y – Learning Interest	0.431	0.067	30
Female	X – Mathematics Anxiety ⇿ Y – Learning Interest	0.750	0.000	35

As shown in Table 5, the correlation coefficient for male respondents is r = 0.431 with a significance value of p = 0.067 (> 0.05). This indicates a positive direction and a moderate strength of the relationship; however, the result is not statistically significant, since the p-value exceeds the 0.05 threshold.

In contrast, the correlation coefficient for female respondents is r = 0.750 with a significance value of p = 0.000 (< 0.05). This indicates a positive direction and a strong strength of relationship, and the result is statistically significant. Therefore, among female students, mathematics anxiety shows a significant positive correlation with learning interest, whereas among male students, the relationship is positive but not significant.

Discussion

This study explores how anxiety corresponds with students' interest in mathematics study among students in the Islamic Economics Study Program at the STAI Sangatta East Kutai. Various sources have stated that mathematics is often considered a challenging subject that can cause anxiety (Wulandari, 2020; Wulandari & Gusteti, 2021; Wulandari & Hayati, 2022); (T. T. Wijaya et al., 2022), which, consequently, may influence interest and learning achievements within the framework of Sharia economics. A good understanding of mathematics is crucial in Islamic economics because students are expected to apply the principles of Islamic economics and finance, which often involve mathematical calculations and analysis.

Table 4 displays the correlation analysis conducted to explore how mathematics anxiety is related to students' interest in math learning, analyzed separately for male and female participants. Among male students, the correlation coefficient (*r*) is 0,431. Although this reflects a moderately positive association between the two variables, it does not reach statistical significance at the 5% level, as the obtained r-value is below the critical value from the table (0,431 < 0,456). This indicates that, while there is a tendency for male students, a notable pattern suggests that those who feel more anxious about mathematics often demonstrate a heightened interest in learning it, with the possibility that this pattern could also be observed in the opposite direction, the observed pattern cannot be confidently generalized to the broader population.

With a correlation coefficient of 0,750, the relationship observed among female students is statistically significant, exceeding the critical value of 0,355 by a considerable margin, indicating a stronger relationship. For female students, there appears to be a strong, statistically significant correlation between math anxiety and their interest in the subject. In this case, an increase in the reported

anxiety levels corresponds to a tendency toward higher levels of learning interest. This finding indicates a reliable and meaningful association for female students, suggesting that mathematics anxiety may be more central in shaping their engagement and interest in mathematical learning.

Overall, the results reveal gender differences in how mathematics anxiety influences students' interest in studying the subject. Although both male and female students demonstrate a positive correlation, statistical significance and stronger association are observed only in the female group. These findings underscore the need to account for gender when developing strategies to reduce mathematics anxiety and enhance student engagement in learning.

This study highlights the need to simultaneously address mathematics anxiety and students' interest in learning as essential components of effective mathematics education. Shishigu highlights that when left unmanaged, math anxiety doesn't just interfere with students' academic achievement—it can also negatively impact their daily functioning and emotional health (Putri et al., 2020). Studies have demonstrated that elevated levels of math anxiety can adversely affect students' academic performance and potentially hinder their career opportunities in the future. It can also reduce the effectiveness of their cognitive abilities during problem-solving (Ramirez et al., 2016) and can impair the quality of cognitive processing during problem-solving tasks (Wulandari & Hayati, 2022).

Mathematics anxiety is typically characterized by feelings of discomfort, such as worry, tension, fear, and unease, when engaging with mathematics learning (Bjälkebring, 2019; Demedts et al., 2022). Feelings of anxiety toward mathematics often stem from a variety of factors, including past struggles with the subject, the widespread belief that math is inherently challenging, and the stress that comes with academic expectations (Ahmmed et al., 2024; Arevee & Vintere, 2023; Carmo & Simionato, 2012). This study highlights that mathematics anxiety is not simply a cognitive challenge; it also involves emotional and psychological factors that can obstruct effective learning. The impacts of mathematics anxiety can extend beyond academic settings, affecting daily functioning and mental well-being (Ashcraft & Moore, 2009; Demedts et al., 2022); (Yelvalinda et al., 2019). Therefore, understanding this issue and its underlying causes is critical for developing effective intervention strategies.

Student interest in learning is a key psychological factor that enhances their engagement in educational activities, as noted by several studies (Cancino, 2021; Flowerday & Shell, 2015; Herpratiwi & Tohir, 2022; Sansone et al., 2019). A high interest in mathematics can enhance concentration, conceptual understanding, and academic performance (Gilmore et al., 2018; Jazuli et al., 2017; Wong & Wong, 2019). Conversely, low interest may result in decreased motivation, difficulty understanding concepts, and poor academic outcomes. This study emphasizes that, alongside mathematics anxiety, a lack of interest in learning mathematics presents a major challenge in mathematics education. As such, efforts to enhance students' interest in the subject should be a central focus to make mathematics learning more effective and engaging for students.

This study underscores the gender-specific differences in how mathematics anxiety correlates with students' interest in the subject. Within the group of male students, a positive but statistically non-significant correlation was found, suggesting that increased anxiety does not consistently correspond with greater interest in mathematics. This may be attributed to differing coping mechanisms, perceptions of mathematics, or sociocultural influences. Surprisingly, among female students, greater math anxiety was linked to increased interest in the subject, and this relationship proved to be statistically significant. The data imply that female students with heightened anxiety are more likely to show an increased interest in the subject (Asanjarani et al., 2024; Milovanović, 2020; Ng & Teoh, 2019; Amelia & Ulfah, 2022). These gender differences may be rooted in variations in educational experiences, social expectations, or stress management strategies between male and female students.

This unexpected pattern among female students challenges traditional assumptions about the detrimental effects of academic anxiety, suggesting a more nuanced interaction between emotional responses and motivational drivers. It is possible that for some female students, anxiety may act as a

form of internal pressure that fuels engagement rather than deterring it. This could reflect a deeper personal or societal investment in academic success, particularly in subjects historically perceived as male-dominated, like mathematics. In such contexts, anxiety might be interpreted not only as a barrier but also as an indicator of commitment and aspiration. These findings invite further investigation into the emotional landscapes that influence learning behaviors, especially how anxiety can manifest in constructive, rather than purely inhibitive, ways.

Moreover, the gender-specific nature of this relationship underscores the importance of adopting a differentiated pedagogical approach that accounts for students' emotional and psychological profiles. Educators and policymakers should remember that a one-size-fits-all model may overlook the intricate dynamics in student motivation and performance. For example, strategies aimed at reducing anxiety may be beneficial for male students but could inadvertently dampen the intrinsic motivation of female students who respond differently to academic stress. As such, interventions should be context-sensitive, promoting academic excellence and emotional resilience tailored to diverse learner profiles. This perspective emphasizes the need for inclusive educational frameworks, recognizing the complex interplay between emotion, identity, and academic interest.

The significance of these findings for improving mathematics teaching strategies at the tertiary level, especially within Islamic Economics programs, cannot be overstated. Educators should know the subtle relationship between mathematics anxiety and interest, which may differ across genders. Teaching strategies considering psychological and sociocultural aspects are likely more effective in mitigating anxiety and promoting deeper engagement with mathematics.

4. CONCLUSION

This study analyzed the relationship between learners' anxiety in mathematics and their interest in acquiring mathematical knowledge within the Islamic Economics program at STAI Sangatta, East Kutai. The findings highlight a gender difference, where female students exhibited a strong, positive correlation, while male students showed a weaker, statistically insignificant relationship. These results suggest that mathematics anxiety may have a more pronounced influence on female students' engagement with mathematical material. Considering the importance of mathematics in studying Islamic economics, it is essential to address psychological factors like anxiety to support students' academic performance and career readiness.

Based on these findings, it is recommended that higher education institutions, particularly those with economics or finance-related programs, develop targeted interventions that address both emotional and motivational aspects of mathematics learning. Educators should adopt gender-responsive strategies that consider differences in anxiety responses and interest formation. Practically, this could involve implementing anxiety-reduction workshops, integrating real-world economic applications into mathematics instruction, and fostering a supportive classroom climate. A deeper theoretical exploration is needed to uncover the psychological drivers behind the gender differences observed in this connection. Longitudinal and cross-cultural studies could also enrich our understanding and support the development of more inclusive and effective mathematics education models in Islamic and broader academic contexts.

REFERENCES

Ahmmed, S., Saha, J., Tamal, M. A., Abdullah Al Mamun, K., & Islam, S. (2024). Factors predicting the mathematics anxiety of adolescents: a structural equation modeling approach. *Frontiers in Psychiatry*, *15*(December), 1–14. https://doi.org/10.3389/fpsyt.2024.1484381

Amelia, T., & Ulfah, S. (2022). Pengaruh Kecemasan Matematika Siswa Terhadap Kemampuan Penalaran Matematis Pada Pembelajaran Daring. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*,

11(1), 81. https://doi.org/10.25273/jipm.v11i1.13215

Arevee, E., & Vintere, A. (2023). Overcoming Mathematical Anxiety To Promote Progress in Mathematics During Undergraduate Engineering Studies At the University. *Engineering for Rural Development*, *22*, 1069–1074. https://doi.org/10.22616/ERDev.2023.22.TF215

Asanjarani, F., Arif, A., Rashidi, B., & Bolghan-Abadi, M. (2024). The relationship between math anxiety and educational motivation: the mediating role of school belongingness. *Educational Research and Evaluation*, *29*(5–6), 322–343. https://doi.org/10.1080/13803611.2024.2348084

Ashcraft, M. H., & Moore, A. M. (2009). Mathematics anxiety and the affective drop in performance. *Journal of Psychoeducational Assessment*, *27*(3), 197–205. https://doi.org/10.1177/0734282908330580

Aulia, S., Zetriuslita, Z., Amelia, S., & ... (2021). Analisis Minat Belajar Matematika Siswa dalam Menggunakan Aplikasi Scratch pada Materi Trigonometri. *JURING (Journal for …*, *4*(3), 205–214.

Berutu, M. H. A., & Tambunan, M. I. H. (2018). Pengaruh Minat Dan Kebiasaan Belajar Terhadap Hasil Belajar Biologi Siswa SMA Se-Kota Stabat. *Jurnal Biolokus*, *1*(2), 109. https://doi.org/10.30821/biolokus.v1i2.351

Bjälkebring, P. (2019). Math Anxiety at the University: What Forms of Teaching and Learning Statistics in Higher Education Can Help Students With Math Anxiety? *Frontiers in Education*, *4*(April), 1–5. https://doi.org/10.3389/feduc.2019.00030

Cancino, M. (2021). Incidental vocabulary learning and retention of EFL learners. *Revista Española de Lingüística Aplicada/Spanish Journal of Applied Linguistics*, *34*(1), 31–52. https://doi.org/10.1075/resla.19049.can

Carmo, J. dos S., & Simionato, A. M. (2012). Reversão de ansiedade à matemática: Alguns dados da literatura. *Psicologia Em Estudo*, *17*(2), 317–327. https://doi.org/10.1590/S1413-73722012000200015

Demedts, F., Reynvoet, B., Sasanguie, D., & Depaepe, F. (2022). Unraveling the role of math anxiety in students' math performance. *Frontiers in Psychology*, *13*(November), 1–9. https://doi.org/10.3389/fpsyg.2022.979113

Flowerday, T., & Shell, D. F. (2015). Disentangling the effects of interest and choice on learning, engagement, and attitude. *Learning and Individual Differences*, *40*(February), 134–140. https://doi.org/10.1016/j.lindif.2015.05.003

Gilmore, C., Clayton, S., Cragg, L., McKeaveney, C., Simms, V., & Johnson, S. (2018). Understanding arithmetic concepts: The role of domain-specific and domain-general skills. *PLoS ONE*, *13*(9), 1–20. https://doi.org/10.1371/journal.pone.0201724

Gunardi. (2020). Inquiry Based Learning dapat Meningkatkan Hasil Belajar Siswa dalam Pelajaran Matematika. *Social, Humanities, and Education Studies (SHEs): Conference Series*, *3*(3), 2288–2294. https://jurnal.uns.ac.id/shes

Herpratiwi, & Tohir, A. (2022). Learning Interest and Discipline on Learning Motivation. *International Journal of Education in Mathematics, Science and Technology*, *10*(2), 424–435. https://doi.org/10.46328/ijemst.2290

Himmi, N., & Azni, A. (2017). Hubungan Kesiapan Belajar Dan Kecemasan Matematika Terhadap Hasil Belajar Matematika Siswa Smp. *Pythagoras*, *6*(1), 22–30. https://doi.org/10.33373/PYTHAGORAS.V6I1.619

Jazuli, A., Setyosari, P., Sulthon, & Kuswandi, D. (2017). Improving conceptual understanding and problem-solving in mathematics through a contextual learning strategy. *Global Journal of Engineering Education*, *19*(1), 49–53.

Karimuddin Abdullah, Misbahul Jannah, Ummul Aiman, Suryadin Hasda, Zahara Fadilla, Ns. Taqwin, M., Ketut Ngurah Ardiawan, & Meilida Eka Sari. (2022). *Metodologi Penelitian Kuantitatif*. Yayasan Penerbit Muhammad Zaini.

Komariyah, S., Afifah, D. S. N., & Resbiantoro, G. (2018). Analisis Pemahaman Konsep Dalam Memecahkan Masalah Matematika Ditinjau Dari Minat Belajar Siswa. *SOSIOHUMANIORA: Jurnal Ilmiah Ilmu Sosial Dan Humaniora*, *4*(1), 1–8. https://doi.org/10.30738/sosio.v4i1.1477

Lisma, E., Rahmadhani, R., & Siregar, M. A. P. (2019). Pengaruh Kecemasan Terhadap Minat Belajar Matematika Siswa. *ENLIGHTEN (Jurnal Bimbingan Dan Konseling Islam)*, *2*(2), 85–91. https://doi.org/10.32505/enlighten.v2i2.1345

Luthfiyah, & Hadi, W. (2021). Kecemasan Siswa Terhadap Matematika Pada Pembelajaran Online Di Masa Pandemi Covid-19 Ditinjau Dari Tingkatan Sekolah Dan Gender. *Transformasi : Jurnal Pendidikan Matematika Dan Matematika*, *5*(1), 427–440. https://doi.org/10.36526/tr.v5i1.1149

Marhadi Saputro, Yadi Ardiawan, D. F. (2015). FAKTOR-FAKTOR YANG MEMPENGARUHI (STUDI KORELASI PADA MAHASISWA PENDIDIKAN MATEMATIKA IKIP PGRI PONTIANAK). *Jurnal Pendidikan Informatika Dan Sains*, *4*(2), 233–246.

Mbagho, H. M., & Tupen, S. N. (2020). Pembelajaran Matematika Realistik dalam Meningkatkan Hasil Belajar Matematika Materi Operasi Bilangan Pecahan. *Journal Basicedu*, *5*(1), 121–132. https://doi.org/10.31004/basicedu.v5i1.632

Milovanović, I. (2020). Math anxiety, achievement, and motivation in high school students: Gender effects. *Croatian Journal of Education*, *22*(1), 175–206. https://doi.org/10.15516/cje.v22i1.3372

Ng, P. F., & Teoh, K. K. (2019). Gender differences and affective factors influencing mathematics learning success in an enabling program. *International Journal of Information and Education Technology*, *9*(4), 306–309. https://doi.org/10.18178/ijiet.2019.9.4.1217

Nugroho, M. A., Muhajang, T., & Budiana, S. (2020). Pengaruh Minat Belajar Siswa Terhadap Hasil Belajar Mata Pelajaran Matematika. *JPPGuseda | Jurnal Pendidikan & Pengajaran Guru Sekolah Dasar*, *3*(1), 42–46. https://doi.org/10.33751/jppguseda.v3i1.2014

Pramudya, P. A., & Safrul, S. (2022). Analisis Model Pembelajaran Inkuiri Terbimbing terhadap Minat Belajar Matematika Siswa Sekolah Dasar. *Jurnal Basicedu*, *6*(5), 8131–8138. https://doi.org/10.31004/basicedu.v6i5.3749

Prastika, Y. D. (2020). Pengaruh Minat Belajar Siswa Terhadap Hasil Belajar Matematika Siswa Smk Yadika Bandar Lampung. *Jurnal Ilmiah Matematika Realistik*, *1*(2), 17–22. https://doi.org/10.33365/ji-mr.v1i2.519

Putri, H. E., Wahyudy, M. A., Yuliyanto, A., & Nuraeni, F. (2020). Development of instruments to measure the mathematical anxiety of elementary school students. *International Journal of Learning, Teaching and Educational Research*, *19*(6), 282–302. https://doi.org/10.26803/IJLTER.19.6.17

Ramirez, G., Chang, H., Maloney, E. A., Levine, S. C., & Beilock, S. L. (2016). On the relationship between math anxiety and math achievement in early elementary school: The role of problem-solving strategies. *Journal of Experimental Child Psychology*, *141*, 83–100. https://doi.org/10.1016/j.jecp.2015.07.014

Rina, Herna, & Nur Fahri Tadjuddin. (2021). Pengaruh Minat Terhadap Hasil Belajar Matematika Siswa dengan Aktivitas Belajar Sebagai Variabel Intervening. *JTMT: Journal Tadris Matematika*, *2*(1), 19–27. https://doi.org/10.47435/jtmt.v2i1.648

Safiyah, S. (2020). *The Relationship Between Academic Self-Efficacy and Mathematics Anxiety in Upper Elementary School Students*. *7*, 1–15. https://doi.org/10.21070/acopen.7.2022.5459

Sansone, C., Geerling, D. M., Thoman, D. B., & Smith, J. L. (2019). Self-Regulation of Motivation. In *The Cambridge Handbook of Motivation and Learning* (Issue February). https://doi.org/10.1017/9781316823279.006

Saputra, P. R. (2014). Kecemasan Matematika dan Cara Menguranginya (Mathematic Anxiety and How To Reduce It). *Journal Phytagoras*, *3*(2), 75–84.

Sholehah, S. H., Handayani, D. E., & Prasetyo, S. A. (2018). Minat Belajar Siswa Pada Mata Pelajaran Matematika Kelas Iv Sd Negeri Karangroto 04 Semarang. *Mimbar Ilmu*, *23*(3), 237–244. https://doi.org/10.23887/mi.v23i3.16494

Tafonao, T. (2018). Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, *2*(2), 103. https://doi.org/10.32585/jkp.v2i2.113

Wahyudy, M. A., Putri, H. E., Muqodas, I., Purwakarta, K., & Indonesia, U. P. (2019). Penerapan Pendekatan Concrete-Pictorial-Abstract (CPA) Dalam Menurunkan Kecemasan Matematis Siswa Sekolah Dasar. *Simposium Nasional Ilmiah & Call for Paper Unindra (Simponi)*, *1*(1), 228–238. https://doi.org/10.30998/simponi.v0i0.428

Wijaya, T. T., Cao, Y., Weinhandl, R., Yusron, E., & Lavicza, Z. (2022). Applying the UTAUT Model to Understand Factors Affecting Micro-Lecture Usage by Mathematics Teachers in China. *Mathematics*, *10*(7), 1–20. https://doi.org/10.3390/math10071008

Wijaya, Y. (2021). Hubungan Minat Belajar Dengan Hasil Belajar Matematika Siswa Kelas Xi.Ipa.2 Sman 1 Muaro Jambi Semester Ganjil Tahun Pelajaran 2019-2020. *SECONDARY: Jurnal Inovasi Pendidikan Menengah*, *1*(4), 267–272. https://doi.org/10.51878/secondary.v1i4.609

Wong, S. L., & Wong, S. L. (2019). Relationship between interest and mathematics performance in a technology-enhanced learning context in Malaysia. *Research and Practice in Technology Enhanced Learning*, *14*(1). https://doi.org/10.1186/s41039-019-0114-3

Wulandari, S. (2020). Analisis Kesalahan Menyelesaikan Soal Trigonometri Siswa Kelas X Sma. *Math Education Journal*, *4*(1), 64–80. https://doi.org/10.15548/mej.v4i1.904

Wulandari, S., & Gusteti, M. U. (2021). Defragmentation of Preservice Teachers' Thinking Structures in Solving Higher Order Mathematics Problems. *Journal of Physics: Conference Series*, *1940*(1). https://doi.org/10.1088/1742-6596/1940/1/012099

Wulandari, S., & Hayati, I. (2022). Studi Literatur : Peran Questioning Sebagai Scaffolding dalam Pembelajaran Matematika. *Jurnal Pedagogik Matematika*, *5*(2), 43–52.

Yelvalinda, Y., Pujiastuti, H., & Fatah, A. (2019). Pengaruh Model Pembelajaran Problem Based Learning terhadap Pemahaman Matematis Ditinjau dari Kemampuan Awal Matematika. *Edumatica : Jurnal Pendidikan Matematika*, *9*(1), 23–32. https://doi.org/10.22437/edumatica.v9i1.6108