African Journal of Emerging Issues
Peer reviewed | Double blind | Interdisciplinary

African Journal of Emerging Issues (AJOEI)
Online ISSN: 2663 - 9335
Available at: https://ajoeijournals.org

Educational Psychology

ENHANCING STUDENTS' PSYCHOLOGICAL RESPONSES IN IMPROVING MATHEMATICS PERFORMANCE IN SECONDARY SCHOOLS IN SUBA NORTH SUB-COUNTY, KENYA

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Publication Date: June 2026

ABSTRACT

Persistent underperformance in mathematics remains a significant challenge in Kenyan secondary schools, particularly in rural settings where learners continue to record low achievement despite various educational interventions. Although previous studies have largely focused on instructional strategies, curriculum implementation, and school-based structural factors, limited attention has been given to psychological determinants of learners' achievement in mathematics. In consideration of this gap, there was a need to focus a study on psychological determinants in enhancing performance in mathematics. The objective of the study was to determine the influence of students' psychological responses on performance in mathematics in secondary schools in Suba North Sub-County, Homa Bay County, Kenya. The study was anchored on Victor Vroom's Expectancy Theory, which explains that individuals' performance is influenced by their beliefs about their ability to succeed and the expected outcomes of their efforts. The theory posits that learners are more likely to perform better when they believe in their capabilities and expect positive outcomes from their academic effort. A descriptive survey design within a mixed methods approach was adopted. The target population comprised 2,285 respondents from 28 public secondary schools, including 2,204 Form Four students, 53 mathematics teachers, and 28 principals. Using Taro Yamane's formula (e = 0.05), a sample of 339 students was selected, while teachers were purposively sampled and principals were included through census sampling, giving a total sample size of 420 respondents. Data were collected using questionnaires and interview guides. Instrument validity was established through expert review, while reliability was tested using the test–retest method. Data analysis was conducted using both descriptive and inferential statistics, including Pearson correlation and t-test, while qualitative data were analyzed thematically. Ethical considerations such as anonymity and confidentiality were observed, where respondents' identities were replaced with codes. The findings revealed that there was no statistically significant difference between students and teachers of mathematics regarding psychological responses influencing performance ($p > .05$ across all constructs). This indicated a general consensus that psychological factors such as anxiety, fear, frustration, negative perception,

and lack of confidence influence mathematics performance. Furthermore, the results established a statistically significant strong positive relationship between students' psychological responses and performance in mathematics (r = .614, p = .000). This implies that improved psychological responses are associated with better performance in mathematics, while negative psychological states lead to poor performance. Based on these findings, it was concluded that students' psychological responses significantly influence performance in mathematics in secondary schools. The study established that learners who demonstrate positive psychological dispositions such as confidence, motivation, and emotional stability tend to perform better in mathematics, whereas those experiencing anxiety, fear, and emotional distress tend to perform poorly. The study therefore recommended that mathematics teachers should adopt supportive and learner-centered instructional strategies that reduce anxiety, fear, emotional distress, and negative attitudes toward mathematics in order to enhance students' performance in the subject.

Keywords: *Self-efficacy, Psychological responses, Mathematics performance, Academic achievement.*

1. INTRODUCTION

Psychological growth among learners is a key determinant towards their academic activities and success, especially in subjects like mathematics which demand long attention, perseverance and ability to solve problems. The psychological reactions of anxiety, interest, attitude, perception, and emotional stability play vital roles in influencing the way students tackle mathematical tasks and eventually shape the performance leve (Ginting, 2024). These psychological mechanisms can either promote or discourage confidence and perseverance of learners to solve mathematical problems in a highly demanding academic setting(M'kiambi, 2013). The learners who exhibit good psychological adaptation are likely to exhibit greater motivation and better performance whereas learners undergoing negative psychological states usually find it difficult to comprehend concepts and to work hard in their studies.

It is a known fact across the world that the psychological health of the students is gradually turning out to be a measure of academic achievement. As an example, research studies have been carried out in different settings of learning where learners are found to be anxious in mathematics, negatively oriented or emotionally troubled resulting in poor performance compared to those with favorable psychological orientations (Mutegi, Gitonga, & Rugano, 2021). In the United States, the higher anxiety and psychological distress levels in adolescents have been linked to less academic engagement and poor academic performance (Lee, Griffin, Ragavan, & Patel, 2024). Similarly,low self-esteem, lack of confidence, and negative attitude towards mathematics have been outlined as psychological factors that have contributed to the negative performance in the subject (Ugwuanyi, Okeke, & Asomugha, 2020). These results indicate that psychological responses are not just personal qualities but also important scholastic determinants that define the outcomes of learning in different settings.

In Kenya, the issue of psychological maturity of students to learn mathematics has remained an issue of concern among education stakeholders in Kenya. Research has found that students tend to develop negative attitudes, anxiety, and mistrust towards mathematics, which negatively influences their performance (Mutegi et al., 2021). In most secondary schools, students find mathematics to be a challenging subject and as a result, develop fear, avoidance and less engagement in classroom activities. Moreover, negative psychological reactions in students are

also caused by external stress factors like the pressure to pass examination, lack of support systems, and unfavorable learning conditions(KAMAU, 2022). These obstacles indicate that learning process is highly psychological and it needs intended focus in enhancing mathematics performance.

At Suba North Sub-County in Homa Bay County, there has been a consistent low performance in mathematics and this has caused a concern among stakeholders in education on the learner factors that contribute to poor performance. Although there are different interventions that have been made to enhance teaching and learning, students have maintained low performance, something that can be partly blamed on the psychological retaliations that they have towards mathematics. The Ministry of Education (MoE, Homa Bay County, 2024) notes that learners in this sub-county usually exhibit low confidence levels, negative attitudes, and high levels of anxiety towards learning mathematics, which can negatively affect their learning outcomes. Consequently, this research was aimed at investigating the effect of the psychological reaction of students on performance in mathematics in the secondary schools in the Suba North Sub-County, Homa Bay County, Kenya.

Pilot Study

Piloting was conducted to ascertain the dependability of the research instruments prior to the main data collection, using the test-retest method. 10 percent of the sample was utilized for piloting as proposed by Mugenda and Mugenda (2018). Questionnaires were distributed to students in selected secondary schools in Suba Central Sub-County, Homa Bay County, a sub county that shares similar demographic characteristics and comparable performance in mathematics trends with Suba North Sub-County, the main study area. The same questionnaires were again administered by the researcher to the same people two weeks later with every condition held constant as in the first phases. Data analysis was relying on Cronbach alpha internal consistency response. The responses were then paired because the questions served as a first and a second set to show to what extent the response was consistent (Mugenda & Mugenda, 2019).

Instrument Validity

Validity, as defined by Munyi and Orodho (2015), refers to the extent to which a concept is assessed using an empirical scale or scales. Content validity was achieved through the use of the supervisors to provide a review of the extent to which the questions assessed the specific construct. It was only used after reaching the content validity threshold of. 7. Face validity involves informal checking of a questionnaire by non-experts, in this case, reviewing how comprehensible and clear it was and relevant for the population; it was reliant on the self-assessment of the evaluator (Chan & Idris, 2017).

Instrument Reliability

The measurement would be reliable because the same result was obtained repeatedly. This was achievable through comparing diverse types of the same measurement and the same technique under the same conditions (Ahmed & Ishtiaq, 2021). Piloting was also performed to establish the reliability of the research tools using the test-retest method. The tool was utilized in data collection after attaining a reliability index of .7. Scoring of the questionnaires was carried out manually by the researcher. Processing of results was performed as per the Cronbach alpha responses of internal consistency, and the responses were compared to the first and the second series of questions to uncover the degree to which the responses concurred.

2. DATA COLLECTION TECHNIQUES

The researcher briefed the respondents. The researcher presented the study rationale and the importance of data collection. Quantitative data were gathered using a prepared questionnaire by the researcher for the respondents. The questionnaires were allotted a thirty-working-day deadline to distribute and retrieve after the date of issuance. The researcher prepared the data using the drop-and-pick approach. Data was gathered using questionnaires for the students and teachers of mathematics and interview schedule for the principals. The researcher allotted a signed 20-30 minutes for each respondent to conduct the interview.

3. RESULTS AND DISCUSSIONS

The study sought to determine the influence of students' psychological response on performance in mathematics in secondary schools. The descriptive statistical analysis of their responses are presented in table 1 Influence of Students' Psychological Responses on Performance in Mathematics.

Key: Respondents (R), Students (S), Teachers of Mathematics (TM), Mean Ratings (MR)

Interpretation of Overall Mean Ratings (OMR); 4.45-5.00 (Strongly Agree), 3.45-4.44 (Agree), 2.45-3.44 (Neutral), 1.45-2.44 (Disagree), 1.00-1.44 (Strongly Disagree)

Table 1: Psychological Determinant Enhancing Performance in Mathematics

Students' Psychological Responses	**R**		**RATINGS**					**MR**	**OMR**
			SA 5	**A 4**	**N 3**	**D 2**	**SD 1**		
Students worry a lot during mathematics lesson	S	F	56	101	40	19	33	3.51	3.81
		%	22.5	40.6	16.1	7.6	13.3		
	TM	F	23	18	7	5	0	4.11	
		%	43.4	34.0	13.2	9.4	0.0		
Students display excessive fear of mathematics	S	F	87	92	10	14	46	3.63	3.60
		%	34.9	36.9	4.0	5.6	18.5		
	TM	F	19	13	5	11	5	3.57	
		%	35.8	24.5	9.4	20.8	9.4		
Students view mathematics negatively during mathematics lessons	S	F	126	77	25	18	3	4.22	4.21
		%	50.6	30.9	10.0	7.2	1.2		
	TM	F	26	17	6	2	2	4.19	
		%	35.8	32.1	11.3	3.8	3.8		
Students are irritated when they manipulate mathematics learning materials	S	F	59	103	31	40	16	3.60	3.81
		%	23.7	41.4	13.3	16.1	6.4		
	TM	F	19	24	6	0	4	4.02	
		%	35.8	45.3	11.3	0.0	7.5		
Students seem frustrated during mathematics lessons	S	F	21	69	50	10	99	2.61	2.91
		%	8.4	27.7	20.1	4.0	39.8		
	TM	F	20	2	14	3	14	3.21	
		%	37.7	3.8	26.4	56.6	26.4		
Students are always withdrawn from mathematics	S	F	103	100	36	10	0	4.19	4.27
		%	41.4	40.2	14.5	4.0	0.0		
	TM	F	30	12	10	1	0	4.34	
		%	56.6	22.6	18.9	1.9	0.0		
Students display hopelessness when it is time for mathematics' class work	S	F	86	26	90	0	47	3.42	3.78
		%	34.5	10.4	36.1	0.0	18.9		
	TM	F	30	13	0	7	3	4.13	
		%	56.6	24.5	0.0	13.2	5.7		
Students feel distressed when solving mathematical problems	S	F	123	65	36	15	10	4.11	4.20
		%	49.4	26.1	14.5	6.0	4.0		
	TM	F	31	10	9	2	1	4.28	
		%	58.5	18.9	17.0	3.8	1.9		

In Table 1, that presents the construct, "students worry a lot during mathematics lesson." 40.6% of the students agreed with the statement while 43.4% Teachers of Mathematics (TM) strongly agreed with it. Another 22.5% of the students strongly agreed with the statement whereas 34% of TM just agreed with it. Cumulatively, 63.1% of the students and 77.4% of TM agreed with the statement that students worry a lot during mathematics lesson. The quantitative findings concur

with that of Lapite (2021) who found that psychological constructs like worries affect performance in mathematics (Demedts, Reynvoet, Sasanguie, & Depaepe, 2022). However, 7.6% of the students and 9.4% of the TM disagreed with the statement while another 13.3% of the students and none of the TM strongly disagreed with the statement of the construct. Moreover, 16.1% of the students and 13.2% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students worry a lot during mathematics lesson," is 3.81 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students worry a lot during mathematics lesson" on performance in mathematics. The quantitative findings agree with that of Živković et al. (2022) who found that students are always anxious during mathematics lesson. Therefore, teachers of mathematics should offer guidance and counseling to students against mathematical anxiety (Živković, Pellizzoni, Mammarella, & Passolunghi, 2022).

From the analyzed qualitative data, a theme of mathematical anxiety emerged and the findings confirmed that, students worry a lot during mathematics lesson. The verbatim of one of the respondents on this theme was that:

> *Many students experience worry when it comes to mathematics. Math anxiety can affect students of all ages and abilities, and can manifest in various ways, from mild discomfort to intense panic during mathematics lesson. This can translate into fear of mathematics teachers as well as mathematics itself.*

The comments signify how dangerous worry for mathematics is to students' psychological response towards mathematics teachers. Students begin to associate the teacher to mathematics and end up hating both.

In Table 1, 36.9% of students agreed with the statement that "students display excessive fear of mathematics" while 35.8% Teachers of Mathematics (TM) strongly agreed with it. Another 34.9% of the students strongly agreed with the statement whereas 24.5% of TM just agreed with it. Cumulatively, 71.8% of the students and 60.3% of TM agreed with the statement that "students display excessive fear of mathematics." The findings support the results of Appiah et al. (2020) that, mathematics anxiety negatively affects the mathematics performance of pupils (Essuman, Nyarko, & Frimpong, 2021). However, 5.6% of the students and 20.8% of the TM disagreed with the statement while another 18.5% of the students and 9.4% of the TM strongly disagreed with the statement of the construct. Moreover, 4% of the students and 9.4% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students display excessive fear of mathematics" is 3.60 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students display excessive fear of mathematics"on performance in mathematics." The findings support that of Daches et al. (2021) who found that math anxiety was linked to anxiety predisposition. However, teachers should not see learners fail in mathematics due to anxiousness but rather offer them conducive learning environment that reduces the excessive fear (Daches Cohen, Korem, & Rubinsten, 2021).

From the qualitative data analyzed, the findings confirm that, students display excessive fear of mathematics" on performance in mathematics thus a theme of anxiety emerged. The verbatim of one of the respondents on this theme was that:

> *Mathematics anxiety negatively impacts performance in math-related tasks, including tests, assignments, and even daily problem-solving. This anxiety can manifest as avoidance of math, decreased self-confidence, and difficulties with working memory and cognitive flexibility, ultimately hindering learning and academic success.*

The analyzed views imply that excess fear of mathematics hinders learners from understanding math content and hence are likely able to fail in math exercises.

In Table 1, 50.6% of students and 35.8% Teachers of Mathematics strongly agreed with the statement that "students view mathematics negatively during mathematics lessons." Another 30.9% of the students and 32.1% of TM agreed with the statement. Cumulatively, 81.5% of the students and 67.9% of TM agreed with the statement that "students view mathematics negatively during mathematics lessons." The quantitative findings are in an agreement with that of Abusalih (2022) who discovered that, negative psychological factors that students are exposed to when learning mathematics, negatively affect their performance and academic progress, as well as their performance in practical real- life situations later on(Abusalih & Hussein, 2022). However, 7.2% of the students and 3.8% of the TM disagreed with the statement while another 1.2% of the students and 3.8% of the TM strongly disagreed with the statement of the construct. Moreover, 10% of the students and 11.3% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students view mathematics negatively during mathematics lessons" is 4.21 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students view mathematics negatively during mathematics lessons" on performance in mathematics. Research on achievement emotions indicates that positive academic emotions enhance mathematics performance, while negative emotions such as frustration and anxiety impair performance (Schoenherr, Schukajlow, & Pekrun, 2025). Therefore teachers should encourage learners not to view mathematics negativelly as this hinders their ability to explore mathematical challenges. Odegi, Juma and Okello (2021) also asserted that the school management should provide more instructional resources and train teachers on how to use the resources to enhance their competency and delivery on mathematic learning areas. From the qualitative data analyzed, a theme of negative attitude towards mathematics emerged and the findings confirm that, students view mathematics negatively during mathematics lessons due to their negative psychological factors like negative thoughts about mathematics. The verbatim of one of the respondents on this theme was that:

> *Negative emotions, such as anxiety and negative attitudes, can significantly hinder mathematical performance. These negative feelings can stem from various sources, including past negative experiences with math, lack of confidence, and perceived difficulty of the subject. Such negativity can lead to avoidance behaviors, reduced motivation, and impaired cognitive function, all of which negatively impact a student's ability to learn and perform well in mathematics.*

The analyzed views imply that negative thoughts, emotions and even attitudes hamper concentration, focus and interest towards mathematics.

In Table 1, 41.4% of students and 45.3% of TM agreed with the statement that "students are irritated when they manipulate mathematics learning materials." Another 23.7% of the students and 35.8% of TM strongly agreed with the statement. Cumulatively, 65.1% of the students and 81.1% of TM agreed with the statement that "students are irritated when they manipulate

mathematics learning materials." Quantitative findings are in agreement with that of Holm et al (2017) who pointed out that, interaction effect between mathematics performance and emotional reactions was significant. However, 16.1% of the students and none of the TM disagreed with the statement while another 6.4% of the students and 7.5% of the TM strongly disagreed with the statement of the construct. Moreover, 13.3% of the students and 11.3% of the TM neither agreed nor disagreed with the statement of the construct (Holm, Hannula, & Björn, 2017). The Overall Mean Rating of the construct, "students are irritated when they manipulate mathematics learning materials" is 3.81 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students are irritated when they manipulate mathematics learning materials" on performance in mathematics. That means that learners who easily get irritated at the sight of mathematics resources never perform well in the subject. The quantitative findings are in line with that of Riegel (2021) who found that Frustration is one of the most prominent emotions reported during mathematical problem-solving across all levels of learning. The frustrations cause irritations that inhibit cognitive ability of learners to conceptualize mathematical concepts (Riegel, 2021).

From the qualitative data analyzed, a theme of irritation and frustration emerged where learners get irritated at the sight of mathematics resources. The verbatim of one of the respondents on this theme was that:

> *Irritation, often manifesting as math anxiety, can significantly hinder performance in mathematics. Negative emotions like anxiety can negatively impact working memory, leading to decreased focus and difficulty solving problems. This can create a cycle of low performance and further anxiety, impacting motivation and potentially leading to avoidance of challenging math tasks.*

The analyzed views imply that irritation negatively influences performance in mathematics. Whenever students are irritated by mathematics learning resources, they develop hatred towards the subject thus leading to poor performance.

In Table 1, 39.8% of students and 26.4% of TM strongly disagreed with the statement that "students seem frustrated during mathematics lessons." Another 4% of the students and 56.6% of TM disagreed with the statement. Cumulatively, 43.8% of the students disagreed while 83% of TM disagreed with the statement that "students seem frustrated during mathematics lessons." The quantitative findings support that of Andersson, et al. (2023) who discovered that, by accepting diverse methods when doing mathematics in mathematics classrooms reduces frustrations during the lesson (Andersson, Foyn, Simensen, & Wagner, 2023). Moreover, 8.4% of the students and 37.7% of the TM strongly agreed with the statement while another 27.7% of the students and 3.8% of TM agreed with the statement of the construct. Moreover, 20.1% of the students and 26.4% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students seem frustrated during mathematics lessons" is 2.91 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students seem frustrated during mathematics lessons" on performance in mathematics. The quantitative findings are in line with that of Riegel (2021) who found that Frustration is one of the most inhibitors of mathematical problem solving processes. Andersson, et al. (2023) also studied storylines in voices of mathematical frustrations and highlighted the importance of creating space for discussions in

mathematics lesson about issues that may challenge inclusive practices and activities. The space could involve one on one consultations or group orientation towards mathematical knowledge.

From the qualitative data analyzed, students are frustrations during mathematics lesson especially if the lesson is accompanied by corporal punishment. The verbatim of one of the respondents on this theme was that:

> *Frustration in mathematics can negatively impact performance by increasing perceived difficulty, reducing task control, and hindering the use of effective learning strategies. However, frustration can also be a sign of engagement and can potentially lead to deeper learning if channeled productively.*

The analyzed views imply that frustrations can affect concentration and hence performance in mathematics.

In Table 1, 41.4% of students and 56.6% Teachers of Mathematics strongly agreed with the statement that "students are always withdrawn from mathematics." Another 40.2% of the students and 22.6% of TM agreed with the statement. Cumulatively, 81.6% of the students and 79.2% of TM agreed with the statement that "students are always withdrawn from mathematics." The quantitative findings agree with that of Stenseng et al. (2022) in Britain who all confirmed that, social withdrawal affects academic achievement in primary and upper secondary school mathematics. However, 4% of the students and 1.9% of the TM disagreed with the statement while none of the students and none of the TM strongly disagreed with the statement of the construct. Moreover, 14.5% of the students and 18.9% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students are always withdrawn from mathematics" is 4.27 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students are always withdrawn from mathematics" on performance in mathematics (Stenseng, Tingstad, Wichstrøm, & Skalicka, 2022). The quantitative findings support Holm et al. (2017) that the interaction effect between mathematics performance group and gender on emotions was significant and that the interaction reduces students' withdrawal from mathematics. Therefore, teachers should constantly initiate one-on-one mathematical interactions with their students.

From the qualitative data analyzed, a theme of withdrawal and hopelessness emerged and the data confirm that, students are always withdrawn from mathematics and that the withdrawal affects their performance in mathematics. The verbatim of one of the respondents on this theme was that:

> *Social withdrawal in students can negatively impact their mathematics performance, particularly for boys, due to decreased engagement and potential difficulties in academic achievement. Conversely, strong academic performance can lead to reduced social withdrawal.*

The analyzed views imply that withdrawal from mathematics can influence the ability of learners to perform in the subject. Teachers should guide and counsel learners who seem to be withdrawn from the subject in order to uplift their morale. This may enhance their interest in mathematics.

In Table 1, 34.5% of students and 56.6% Teachers of Mathematics strongly agreed with the statement that "students display hopelessness when it is time for mathematics' class work."

Another 10.4% of the students and 24.5% of TM agree with the statement. Cumulatively, 44.9% of the students and 81.1% of TM agreed with the statement that "students display hopelessness when it is time for mathematics' class work." The quantitative findings are in an agreement with that of Zumbach et al. (2019) who revealed that being hopeful leads to better ratings of different dimensions of mathematical performance. However, none of the students and 13.2% of the TM disagreed with the statement while 18.9% of the students and 5.7% of the TM strongly disagreed with the statement of the construct. Moreover, 36.1% of the students and none of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students display hopelessness when it is time for mathematics' class work" is 3.78 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students display hopelessness when it is time for mathematics' class work" on performance in mathematics. Consequently (Heo, Bonk, & Doo, 2022) discuss that students' depression and hopelessness should also be monitored on a regular basis to help improve learning engagement during mathematics lesson. The monitoring process should be clear and objective enough to create a conducive environment for mathematical excellence.

From the qualitative data analyzed, students display hopelessness when it is time for mathematics' class work. The verbatim of one of the respondents on this theme was that:

> *Positive mood and hope brings about enjoyment and pride and negative relations for anger, shame, boredom, and hopelessness impact students' grades in mathematics. In most cases, students hope in mathematics will always determine their performance in mathematics.*

The analyzed views imply that bad mood during mathematics brings about hopelessness and in turn impacts performance in mathematics.

In Table 1, 44.9% of students and 58.5% Teachers of Mathematics strongly agreed with the statement that "students feel distressed when solving mathematical problems." Another 26.1% of the students and 18.9% of TM agreed with the statement. Cumulatively, 75.5% of the students and 77.4% of TM agreed with the statement that "students feel distressed when solving mathematical problems." The findings concur with that of Pascoe et al (2020) who indicated that academic-related stress can reduce academic achievement, decrease motivation and increase the risk of school dropout. However, 6% of the students and 3.8% of the TM disagreed with the statement while 4% of the students and 1.9% of the TM strongly disagreed with the statement of the construct. Moreover, 14.5% of the students and 17% of the TM neither agreed nor disagreed with the statement of the construct. The Overall Mean Rating of the construct, "students feel distressed when solving mathematical problems" is 4.20 (out of a maximum possible of 5) which corresponds to an agreement of the construct, "students feel distressed when solving mathematical problems" on performance in mathematics. The quantitative findings agree with Riegel (2021) who found that mitigating frustration can play a positive role during mathematical problem solving process. Therefore, stress and distress brought about by mathematics can induce a feeling of dropping out of school just to escape from mathematical wrath.

From qualitative findings, mathematical distress emerged as a theme. This was confirmed by P21 during an interview with principals. The verbatim of one of the respondents on this theme was that:

High levels of mathematics-related stress, often manifesting as mathematics anxiety, can significantly increase the likelihood of students dropping out of school or avoiding math-related courses. This stress can stem from various factors, including fear of failure, negative experiences with mathematics, and the pressure associated with high-stakes testing.

From the analyzed qualitative data, not all school dropouts are willing to do so but sometimes influenced by difficulties they go through during mathematics lessons especially in cases where teachers cane learners with the aim of enforcing mathematical knowledge, skills and attitude. Therefore, a conducive learning environment can go along in helping learners cope with math challenges.

The views of the two categories of the respondents for each sub variable psychological determinant factors were compared. The analyzed findings of their mean ratings and t-test are presented in table 2.

Table 2: Comparative Views of Respondents on Psychological Determinant

Students' psychological responses	**R**	**MR**	**OMR** **T-test Correlations**
Students worry a lot during mathematics lesson	S	3.51	3.81 t(302)= -.906 p=.789
	TM	4.11	
Students display excessive fear of mathematics	S	3.64	3.61 t(302)=.345 p=.417
	TM	3.57	
Students view mathematics negativelly during mathematics lessons	S	4.22	4.21 t(298)= 1.001 p=.415
	TM	4.19	
Students are irritated when they manipulate mathematics learning materials	S	3.60	3.81 t(299)=-.799 p=.576
	TM	4.02	
Students seem frustrated during mathematics lessons	S	3.60	3.81 t(301)= -.899 p=.599
	TM	4.02	
Students are always withdrawn from mathematics	S	4.19	4.27 t(298)=-1.263 p=.900
	TM	4.34	
Students display hopelessness when it is time for mathematics' class work	S	3.42	3.78 t(298)=-.752 p=.601
	TM	4.13	
Students feel distressed when solving mathematical problems	S	4.11	4.20 Used for Correlations with other sub-variables
	TM	4.28	
Overall Correlations			**r =.614**

In Table 2, the observed p values are all greater than the set alpha (.05) across all the sub-variable groups. Because this is greater than the critical p value (.05), there is insufficient statistical evidence to conclude that the views of students and Teachers of Mathematics (TM) significantly differ regarding students' psychological responses and their influence on performance in mathematics.

For all the constructs examined, including students worry during mathematics lessons, excessive fear of mathematics, negative perception of mathematics, irritation when using mathematics

learning materials, frustration during lessons, withdrawal from mathematics, hopelessness during classwork, and distress when solving mathematical problems, the observed p values consistently exceeded .05. This implies that both groups of respondents generally shared similar perceptions on the role of psychological responses in influencing mathematics performance.

The small variations observed in the mean ratings between students and teachers were therefore not statistically significant, indicating a general consensus that psychological responses have an influence on learners' performance in mathematics. The higher the mean rating assigned to each construct, the greater the perceived influence of that psychological factor on mathematics performance. These findings are consistent with Stenseng et al. (2022), who noted that students' psychological responses significantly influence mathematics performance regardless of gender differences.

The Deterministic Effect of Psychological Determinants on performance in Mathematics

A two tailed Bivariate Pearson correlation analysis was conducted to establish whether a relationship exists between students' psychological responses and performance in mathematics. The results are shown in the Table 3

Table 3: Overall Respondents on Psychological Determinant

Independent Variable	Inferential Statistic Test	Correlation with performance mathematics
Psychological Responses	Pearson Correlation	.614**
	Set Sig. (2-tailed) (α)	.05
	Observed P value	.000

In Table 3, the Pearson correlation coefficient (r = .614) indicates a strong positive relationship between students' psychological responses and performance in mathematics. This implies that improvements in students' psychological responses are associated with improved performance in mathematics, while negative psychological responses correspond with lower performance levels. The observed p-value of .000 is less than the significance level (α = .05), indicating that the relationship is statistically significant.

Since the p-value is below the threshold of .05, it is concluded that students' psychological responses are a significant determinant of performance in mathematics. The correlation further shows that the model explains a meaningful proportion of variation in mathematics performance, demonstrating that psychological factors such as anxiety, mood, distress, attitudes, and perceptions play an important role in shaping learners' achievement in mathematics.

The statistically significant positive correlation (r = .614, p < .05) confirms that psychological responses are not independent of academic outcomes but rather have a measurable influence on performance in mathematics. Therefore, the null hypothesis is rejected, and it is concluded that students' psychological responses significantly influence performance in mathematics. These findings are consistent with Expectancy Theory (1964), which emphasizes that psychological

factors such as motivation, anxiety, and emotional state influence performance outcomes. The results also support Holm et al. (2017), who established a significant relationship between students' psychological responses and academic performance.

4. CONCLUSION AND RECOMMENDATION

The analyzed study findings showed that students' psychological determinant factors positively (r= .614) enhance performance in mathematics in secondary schools. The influence is statistically significant (p = .000) which confirms that students who demonstrate positive attitudes, confidence, emotional stability, and reduced anxiety toward mathematics are more likely to perform better in the subject and that when negative psychological factors such as anxiety, excessive worry, emotional distress and frustration are properly managed and reduced students' performance in mathematics improves significantly. The study recommended that teachers of mathematics should adopt supportive instructional strategies that reduce anxiety, worry, emotional distress, mood instability and distraction to enhance students' perception of mathematics as a subject.

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