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AVERSION BEHAVIOR OF LEARNERS TOWARDS MATHEMATICS: BASIS FOR INTERVENTION PLAN

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ABSTRACT

This study aimed to explore learners' aversion behavior toward mathematics as a basis for developing an intervention plan. The independent variable in the study was learners' aversion behavior toward mathematics. The findings revealed that learners exhibited various aversion behaviors, including giving up easily, laziness, reluctance to study mathematics, poor attention in class, selective listening, stress and anxiety during lessons, boredom and sleepiness, confusion with the material, fear-driven compliance, and skipping classes. These behaviors were mainly influenced by fear of low grades, fear of disappointing parents, the perceived difficulty of mathematics, lack of confidence and self-efficacy, fear of making mistakes, peer influence, social comparison, and pressure related to future academic goals. Teachers also observed these aversion behaviors, such as lack of interest in mathematics, boredom, sleepiness, poor participation, inattention, easy disengagement from tasks, and fear of making mistakes. The study emphasizes the importance of implementing supportive teaching strategies and a focused intervention plan to address students' emotional and behavioral reactions to mathematics.

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INTRODUCTION

Mathematics aversion is a prevalent issue that affects learners of all ages, hindering their academic progress and limiting their future opportunities. This negative attitude toward Mathematics can stem from various factors, including negative experiences in the classroom, fear of failure, lack of relevance, and loss aversion (Barroso et al., 2021).

The issue of learners' attitudes towards mathematics has emerged as a significant concern because, based on observation, even basic math topics are perceived as difficult by many learners (OECD, 2022). Despite the institution's dedication to providing quality education, there is a growing recognition of the need to address the challenges associated with students' perceptions and engagement towards mathematics (UNESCO, 2021).

Sacred Heart de Iloilo, like many educational institutions, faces challenges related to students' attitudes towards mathematics. These challenges may manifest as disinterest in the subject, low academic achievement in math, or a lack of motivation among learners (Barroso et., 2021).

Recent observations and feedback from teachers at Sacred Heart de Iloilo have highlighted varying behaviors among learners towards mathematics. These aversion behaviors not only influence students' academic performance but there is also an impact to those learners who have interest in pursuing STEM (Science, Technology, Engineering, and

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Mathematics) strand. Studies show that mathematics anxiety and avoidance behaviors significantly affect students' decisions to pursue STEM-related fields (Wang et al., 2021). Negative experiences, such as struggling with mathematical concepts or feeling pressure to perform well, can create anxiety and avoidance behavior among students. These experiences can shape students' perceptions of their own abilities and contribute to a sense of inadequacy in the subject. The fear of failure in mathematics is a significant barrier that many learners face. Overcoming this fear is essential for learners to develop a growth mindset and approach challenges with resilience and determination (Dweck & Yeager, 2021).

Furthermore, the perceived lack of relevance of mathematics to learners' lives and interests can lead to disinterest and disengagement from the subject. Learners may struggle to see the practical applications of Mathematics in real-world scenarios, making it difficult for them to connect with the material (Namkung et al., 2022). Loss aversion, where learners are more sensitive to potential losses associated with failing in mathematics than to the potential gains of succeeding, can also contribute to aversion behavior. This aversion to risk-taking and challenge can limit learners' willingness to engage with difficult mathematical tasks.

By understanding the underlying reasons, developing effective intervention plans, and fostering a supportive learning environment, Sacred Heart de Iloilo can empower its learners to overcome their aversion to mathematics and embrace its transformative potential. The researcher can contribute to the development of effective strategies for addressing math aversion.

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The study of aversion behavior towards mathematics is a critical area of research that has the potential to significantly impact students' academic success and overall well-being (Luttenberger et al., 2022). By addressing the root causes of math aversion and developing effective intervention plans, educators can support learners in overcoming their challenges and developing a positive attitude towards mathematics.

MATERIALS AND METHODS

Research Methodology

This chapter presents the research method, research design, research participants, data-gathering procedures, research instrument, and the data analysis applied in the current research. This study may be used to examine the aversion behavior of learners towards mathematics as a basis of intervention plan in Sacred Heart de Iloilo during the school year 2024-2025.

Research Method

The methodology used in this study was the descriptive method of approach when conducting a qualitative research through an in-depth interview. Descriptive research approach aims at defining a phenomenon in its natural occurrence in a systematic manner without controlling variables.

Elliott (2025) also claims that it is meant to give a true reflection of the contemporary conditions, practices, or relationships in educational contexts where a researcher can comprehend trends, patterns as well as implications on practice.

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This method comes in handy whenever conducting educational research is required to record and examine the activities, actions, or impressions in reality, without modifying the setting they are taking place in (Elliott, 2025).

During the interview, the interviewer is free to sit in a distance with the interviewee and think over a series of questions on a given problem.

It is the objective to arrive at the primary or the required perceptions of the respondents in some problem in a social setup using the responses of the respondents to the queries.

Research Design

The research was based on phenomenological design. It is possible to regard phenomenology as a philosophical method of conducting a qualitative research.

Phenomenology seeks to know how others see the world, and how their perception can differ with the generally accepted belief systems by dwelling on the subjective interests of a human being on what she is experiencing.

It is carried out through interviews with the individuals to understand their impressions on phenomenology, and is common in such disciplines as psychology, sociology, and social work.

Phenomenology is concerned with investigations of consciousness architectures as perceived in a first-person perspective. Phenomenology culminates in the study and description of the phenomena as conscious experience without the use of a theory that

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explains the causal aspects or being guided by preconceptions that have not been tested (Biemel & Spiegelberg, 2024).

Participants of the Study

The sample of this research was divided into twenty (20) students of Grades 7-10 and two (2) mathematics teachers of the Sacred Heart de Iloilo, Pavia, Iloilo.

The learner-participants were mostly of the normal age group of 12-16 years old; which is the junior high school levels where the fundamental mathematical principles are highly established.

The two participants in the study involved in the teaching of mathematics were currently teaching mathematics in junior high schools.

Teacher 1 has three (3) years of experience in teaching mathematics, while Teacher 2 has five (5) years of experience. Their presence in the study gave professional observation of the aversion behaviors of learners in relation to mathematics.

Sampling Design

Purposive sampling design adopted in the research. According to Nikolopoulou (2023), purposive sampling is a category of non-probability sampling methods where units are chosen due to their characteristics that satisfy your requirement in the sample.

Purposive sampling means that units are chosen intentionally in purposive sampling. It is also known as the judgmental way of sampling, this method of sampling depends on the judgment of the researcher to identify and select the subject or object, cases or events that can give the most accurate information to fulfill the aims of studying.

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Research Instrument

The instrument utilized in the research was an interview schedule designed by the researcher. The interview schedule is the methodology with a written statement of questions, which are structured, semi-structured or open-ended, that a researcher intends to pose to participants in order to assist her collect consistent information.

It is used as a standardized means of collecting data, guaranteeing that similar subjects and inquiries are answered during interviews so that they can be efficiently compared and analyzed. Face-to-face, telephone, or electronic interview are arranged with the help of the interviewer using the schedule, asking participants the predetermined items and recording their answers (Socio.health, 2024).

The interview schedule contains three primary questions with a focus on how learners conduct when learning mathematics, why learners behave the way that they do when learning mathematics and observations made by teachers regarding the aversion behavior do learners display when learning mathematics.

Data collection and documentation were conducted based on the consent of the participants by voice and video recorder.

Validity of the Research Instrument

Before deciding on the validity of the interview schedule conducted by the researcher, the Dean of the Graduate School, an adviser, along with a panel of jurors, who at that time could be described as being knowledgeable in the subject of study, test and evaluation, and English, were asked to validate each question to be reviewed and amended.

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Validity is the degree to which the results, interpretations and conclusions of the study are correct, significant and suitable in reflecting on the concept under study. It makes sure that the research instrument actually measures what it is designed to measure and the findings are real representations of reality.

When determining a content validity, the question and structure of the instrument should correspond with the variables and objective of the study to ensure that every item is an accurate expression of the construction being studied. Throughout this process, it is sometimes done with the help of experts who either approve or reject the items as being relevant, clear, and representative of the concepts of interest that are under study.

In such a way, researchers maximize the validity and applicability of the information gathered in correlation with the research goal by making sure that the contents and layout of the instrument are aligned with the framework of the study (Creswell & Creswell, 2023).

Appropriate form according to Good and Scates (1972) cited by Soquena (2021), was used to consider the comments, corrections, and suggestions of the panel of validators to the interview schedule.

Data Gathering Procedures

The researcher obtained permits provided by the adviser, Dean of the Graduate School, School Head, and the individual participants to carry out the study. The researcher personally attended the school/place that was convenient on the side of the respondents to undertake the interview.

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The researcher ordered the participants to take part in an interview but before this, the researcher invited the participants to sign a waiver or permission with regard to carrying out the study.

In-depth interview was used with the provision of a voice and video recorder to capture all the details. After series of interviews, all the data collected by the researcher was consolidated.

Data Analysis

Thematic approach was used in analyzing the information collected. As indicated in (Braun & Clarke, 2023), thematic analysis offers a loose but strict format of examining qualitative data to enable researchers to define both the implicit and explicit meanings throughout participants' narratives. It would be particularly appropriate to Complex understanding is the objective of educational research, social and organizational relations. Nowell et al. (2021) also point out that thematic analysis improves qualitative study transparency and credibility by ensuring the use of systematic data coding and interpretation. Interpreted data of the interviews were gathered with the help of Thematic Analysis (Braun & Clarke (2023) that is highly appropriate to recognize, analyze, and report trends (themes) in qualitative data.

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SUMMARY, INSIGHTS, AND RECOMMENDATIONS

Summary

The study was conducted to investigate the aversion behavior of learners towards mathematics as a basis for intervention plan in Sacred Heart de Iloilo, District of Pavia during the school year 2024-2025.

The research method utilized in the study was descriptive using in-depth interview.

The participants consisted of 2 mathematics teachers and 20 selected learners from Grade 7, 8, 9, and 10.

The research instrument utilized in the study was a researcher-made interview schedule. Voice and video recorders were also used for data gathering and documentation depending upon the permission of the participants.

A panel of experts validated the interview schedule and considered all comments and suggestions relative to the validation of the tool.

Permits from the adviser, Dean of the Graduate School, School Head, and individual participants were obtained to allow the researcher to conduct the study. The researcher personally went to the school/place convenient on the part of the participants to conduct the interview.

The researcher consolidated all collected data after the interview. The information was gathered, analyzed, and interpreted using thematic approach.

Based on the analysis of the interview data, the following are the findings of the study:

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Learners' aversion behavior towards mathematics is manifested through giving up easily, reluctance to study, poor attention, selective listening, stress and anxiety, boredom, confusion, fear-driven compliance, and class skipping.

The reasons associated with learners' aversion behavior include fear of low grades, fear of parental disappointment, perceived difficulty of Mathematics, lack of confidence and low self-efficacy, fear of making mistakes, peer influence, and pressure related to future academic goals.

Teachers observed aversion behavior among learners in the form of lack of interest, boredom, poor classroom participation, inattentiveness, giving up easily, and fear of making mistakes, which corroborated learners' self-reported experiences.

Insights

The findings of the study revealed that learners' aversion behavior towards mathematics is primarily influenced by emotional and motivational factors rather than cognitive inability. The manifestations such as giving up easily, reluctance to study, poor attention, anxiety, boredom, confusion, fear-driven compliance, and even class skipping suggest that learners experience significant emotional discomfort when engaging with mathematical tasks.

The identified reasons indicate that learners' negative responses are rooted in anxiety, performance pressure, and diminished belief in their own capability. These findings suggest that learners often interpret difficulty as evidence of inability, which weakens persistence and promotes avoidance behavior.

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The consistency between learners' self-reported experiences and teachers' observations further strengthens the credibility of the results. Teachers' observations of lack of interest, boredom, inattentiveness, low participation, and fear of making mistakes corroborate the emotional and behavioral patterns expressed by learners.

This alignment indicates that aversion behavior is not merely internal but is observable and persistent within the classroom setting.

Recommendations

Based on the findings and insights of the study, the following recommendations are offered:

Mathematics teachers may integrate anxiety-reduction and confidence-building strategies into their instructional practices. Creating a supportive and non-threatening classroom environment can help reduce fear of making mistakes and encourage active participation.

Teachers may also incorporate interactive, learner-centered activities to increase engagement and reduce boredom and withdrawal behaviors.

Collaborative learning strategies and supportive peer interactions may encourage to foster a more positive classroom culture.

School administrators may support professional development programs focused on addressing Mathematics anxiety, strengthening learners' self-efficacy, and promoting positive

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classroom climate. Monitoring the implementation of intervention strategies may also help ensure consistency and effectiveness.

Parents may provide emotional support and encouragement rather than excessive performance pressure. Open communication and realistic expectations can help reduce learners' fear of parental disappointment and strengthen their confidence in learning Mathematics.

Learners may be encouraged to adopt positive coping strategies, such as seeking help when experiencing difficulty, practicing regularly, and developing a growth mindset towards challenges in Mathematics. Building resilience and self-belief may reduce avoidance behaviors.

Proposed intervention plan be implemented on a pilot basis among identified learners who exhibit aversion behavior towards mathematics.

Regular monitoring and documentation of learners' participation, engagement, and behavioral changes are also recommended to evaluate the effectiveness of the intervention.

Future researchers may examine the effectiveness of the proposed intervention plan and explore aversion behavior in other academic subjects or educational levels.

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References

Bandura, A. (2021). *Social Cognitive Theory: An Agentic Perspective on Human Behavior*. *Annual Review of Psychology, 72*. https://doi.org/10.1146/annurev-psych-081920-042019.

Barroso, C., Ganley, C.M., McGraw, A.L., Geer, E.A., Hart, S.A., & Daucourt, M.C. (2021). A Meta-analysis of the Relation between Math Anxiety and Math Achievement. *Psychological Bulletin, 147*(2). https://doi.org/10.1037/bul0000307.

Bernardo, A.B.I. & Ismail, R. (2021). Mathematics Anxiety and Learning Experiences Among Filipino Secondary Students. *Asia Pacific Education Review, 22*(3). https://doi.org/10.1007/s12564-021-09688-2.

Biemel, W. & Spiegelberg, H. (2024). Phenomenology. The Editors of Encyclopedia Britannica.

Braun, V. & Clarke, V. (2023). Thematic analysis: a step-by-step guide. SAGE Publications.

Burns, E.C., Martin, A.J., & Collie, R.J. (2022). Growth Mindset and Academic Resilience: Examining Intervention Effects in Mathematics Education. *Contemporary Educational Psychology, 68*, 102028. https://doi.org/10.1016/j.cedpsych.2021.102028.

Burns, M.K., Jimerson, S.R., & VanDerHeyden, A.M. (2022). *Handbook of response to intervention: the science and practice of multi-tiered systems of support* (2nd ed.). Springer.

Burns, M.K., Jimerson, S.R., & VanDerHeyden, A.M. (2022). *Response to Intervention and Mathematics Support: Evidence-based Practices*. *School Psychology Review, 51(3), 345–360.* https://doi.org/10.1080/2372966X.2022.2034567.

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Available online at https://www.instabrightgazette.com

Burns, M.K., Jimerson, S.R., & VanDerHeyden, A.M. (2022). *Response to intervention and mathematics support: Evidence-based practices*. Guilford Press.

Cambridge University Press (2024). *Aversion*. In *Cambridge dictionary online*. https://dictionary.cambridge.org/.

Carey, E., Hill, F., Devine, A., & Szűcs, D. (2022). The Chicken or the Egg? The Direction of the Relationship between Mathematics Snxiety and Mathematics Performance. *Frontiers in Psychology, 13*, 872905. https://doi.org/10.3389/fpsyg.2022.872905.

Carey, E., Hill, F., Devine, A., & Szűcs, D. (2022). The Role of Fear of Negative Evaluation in Mathematics Anxiety and Avoidance. *Journal of Educational Psychology, 114*(5), 1123–1138. https://doi.org/10.1037/edu0000712.

Chen, L., Ramirez, G., & Beilock, S.L. (2023). Fear of Negative Evaluation and Classroom Participation in mathematics. *Journal of Educational Psychology, 115*(2), 234–249. https://doi.org/10.1037/edu0000754.

Chen, X., Ramirez, G., & Beilock, S.L. (2023). Classroom Anxiety and Its Influence on Mathematics Engagement and Achievement. *Journal of Educational Psychology, 115*(2).

Chen, X., Zhang, L., & Liu, H. (2023). Mathematical Self-Efficacy and Student Engagement: The Mediating Role of Achievement Emotions. *Learning and Individual Differences, 102*, 102268. https://doi.org/10.1016/j.lindif.2023.102268.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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February 2026
Available online at https://www.instabrightgazette.com

Chen, X., Zhang, L., & Ng, K.T. (2023). Self-efficacy and Mathematics Anxiety: The Mediating Role of Academic Emotions in Students' Mathematics Engagement. *Frontiers in Psychology, 14*, 1187421. https://doi.org/10.3389/fpsyg.2023.1187421.

Cowan, N. (2021). Working Memory Capacity and Selective Attention in Complex Learning Tasks. *Educational Psychology Review, 33*(2). https://doi.org/10.1007/s10648-020-09568-3.

Creswell, J.W. & Creswell, J.D. (2023). Research design: qualitative, auantitative, and mixed methods approaches (6th ed.). Thousand Oaks, CA: SAGE Publications.

Daker, R.J., Lyons, I.M., & Ansari, D. (2021). Longitudinal Associations between Mathematics Anxiety and Mathematics Performance. *Journal of Educational Psychology, 113*(3).

Daker, R.J., Lyons, I.M., & Ansari, D. (2021). Longitudinal Relations between Mathematics Anxiety and Mathematics Achievement: A Meta-analysis. *Psychological Bulletin, 147*(2), 134–168. https://doi.org/10.1037/bul0000318.

Daker, R.J., Lyons, I.M., & Beilock, S.L. (2021). The Development of Mathematics Anxiety and Its Longitudinal Effects on STEM Outcomes. *Journal of Educational Psychology, 113*(6), 1231–1246. https://doi.org/10.1037/edu0000632.

Dowker, A., Sarkar, A., & Looi, C.Y. (2021). Mathematics Anxiety: What Have We Learned in 60 Years? *Frontiers in Psychology, 12*, 681142. https://doi.org/10.3389/fpsyg.2021.681142.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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Available online at https://www.instabrightgazette.com

Dowker, A., Sarkar, A., & Looi, C.Y. (2021). Mathematics Anxiety: What Have We Learned in 60 Years? *Frontiers in Psychology, 12*, 680898. https://doi.org/10.3389/fpsyg.2021.680898.

Dowker, A., Sarkar, A., & Looi, C.Y. (2021). Mathematics Anxiety: What Have We Learned in 60 Years? *Frontiers in Psychology, 12*, 678451. https://doi.org/10.3389/fpsyg.2021.678451.

Dweck, C.S. & Yeager, D.S. (2021). Mindsets and the Development of Academic Self-theories. *Annual Review of Psychology, 72*, 689–715. https://doi.org/10.1146/annurev-psych-081620-043920.

Dweck, C.S. & Yeager, D.S. (2021). Mindsets: A View from Two Eras. *Perspectives on Psychological Science, 16*(3), 481–496. https://doi.org/10.1177/1745691620971793.

Elliott, J. (2025). Everyday Voices as Big Data: A Call for the Secondary Analysis of Large-Scale Qualitative Interview Data. *Sociology.* https://doi.org/10.1177/00380385251344472. https://www.britannica.com/topic/phenomenology on January 26, 2025.

Illeris, K. (2021). *Contemporary theories of learning: learning theorists… in their own words* (2nd ed.). Routledge.

Illeris, K. (2021). *Learning and transformation in contemporary society*. Routledge.

Karabenick, S.A. & Gonida, E.N. (2022). Academic Help Seeking and Peer Influence in Achievement Contexts. *Contemporary Educational Psychology, 68*, 102023.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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February 2026
Available online at https://www.instabrightgazette.com

Karabenick, S.A. & Gonida, E.N. (2022). Peer Influence on Academic Motivation and Engagement: Contemporary Perspectives. *Educational Psychologist, 57*(4). https://doi.org/10.1080/00461520.2022.2098715.

Luttenberger, S., Wimmer, S., & Paechter, M. (2022). Spotlight on Math Anxiety. *Psychology Research and Behavior Management, 15*. https://doi.org/10.2147/PRBM.S326486

Luttenberger, S., Wimmer, S., & Paechter, M. (2022). Spotlight on Math Anxiety: Psychological and Educational Aspects. *Frontiers in Psychology, 13*, 820344. https://doi.org/10.3389/fpsyg.2022.820344.

Luttenberger, S., Wimmer, S., & Paechter, M. (2022). Spotlight on Math Snxiety: Psychological Causes and Intervention Strategies. *Frontiers in Psychology, 13*, 872734. https://doi.org/10.3389/fpsyg.2022.872734.

Luttenberger, S., Wimmer, S., & Paechter, M. (2022). Spotlight on Math Anxiety. *Educational Psychology Review, 34*, 1–24.

Maloney, E.A. & Beilock, S.L. (2021). Mathematics Anxiety and Performance: Cognitive and Emotional Mechanisms. *Trends in Cognitive Sciences, 25*(7). https://doi.org/10.1016/j.tics.2021.04.005.

Merriam-Webster (2024). *Basis*. In *Merriam-Webster.com dictionary*. https://www.merriam-webster.com/.

Namkung, J.M., Peng, P., & Lin, X. (2022). The Relation between Mathematics Anxiety and Mathematics Performance among School-aged Students: A Meta-analysis. *Review of Educational Research, 92*(2.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VII, Issue III
February 2026
Available online at https://www.instabrightgazette.com

Namkung, J.M., Peng, P., & Lin, X. (2022). The Relation between Mathematics Snxiety and Mathematics Performance among School-aged Students: A Meta-analysis. *Review of Educational Research, 92*(3), 429–471. https://doi.org/10.3102/00346543211056318.

Namkung, J.M., Peng, P., & Lin, X. (2022). The Relation between Mathematics Anxiety and Mathematics Performance: A Meta-analytic Review. *Psychological Bulletin, 148*(3–4). https://doi.org/10.1037/bul0000352.

Namkung, J.M., Peng, P., & Lin, X. (2022). The Relation between Mathematics Anxiety and Mathematics Performance: A Meta-analytic Investigation. *Review of Educational Research, 92*(2).

Nikolopoulou, K. (2023). Students' Mobile Phone Practices for Academic Purposes: Strengthening Post-Pandemic University Digitalization. *Sustainability*, 14(22), 14958. https://doi.org/10.3390/su142214958.

Nowell, L.S., Norris, J.M., White, D.E., & Moules, N.J. (2021). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods, 20, 1–13.* https://doi.org/10. 1177/1609406921995300.

OECD (2022). *PISA 2022 results (Volume I): the state of learning and equity in education*. OECD Publishing. https://doi.org/10.1787/53f23881-en.

Pekrun, R., Goetz, T., & Hall, N.C. (2022). Control-value Theory of Achievement Emotions: Implications for Mathematics Learning and Boredom. *Educational Psychology Review, 34*(2), 987–1013. https://doi.org/10.1007/s10648-021-09614-5.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VII, Issue III
February 2026
Available online at https://www.instabrightgazette.com

Pekrun, R., Lichtenfeld, S., Marsh, H.W., Murayama, K., & Goetz, T. (2022). Achievement Emotions and Academic Engagement: Longitudinal Evidence. *Learning and Instruction, 78*, 101542.

Pekrun, R., Murayama, K., Marsh, H.W., Goetz, T., & Frenzel, A.C. (2021). Academic Emotions and Student Engagement: The Control-value Theory Perspective. *Educational Psychologist, 56*(2), 1–19. https://doi.org/10.1080/00461520.2021.1885077.

Pekrun, R., Murayama, K., Marsh, H.W., Goetz, T., & Frenzel, A.C. (2021). Achievement Emotions and Academic Engagement: Longitudinal Evidence from Mathematics Learning. *Journal of Educational Psychology, 113*(5), 1037–1055. https://doi.org/10.1037/edu0000628.

Pekrun, R., Murayama, K., Marsh, H.W., Goetz, T., & Frenzel, A.C. (2021). Control–value Theory of Achievement Emotions: Updated Integrative Framework. *Educational Psychology Review, 33*, 1–32.

Pekrun, R., Murayama, K., Marsh, H.W., Goetz, T., & Frenzel, A.C. (2021). Control–value Theory of Achievement Emotions: An Integrative Approach to Emotions in Education. *Educational Psychology Review, 33*, 1–35. https://doi.org/10.1007/s10648-020-09563-8.

Ramirez, G., Shaw, S.T., & Maloney, E.A. (2021). Math Anxiety: Past Research, Promising Interventions, and a New Interpretation Framework. *Educational Psychologist, 56*(3), 145–164. https://doi.org/10.1080/00461520.2021.1893247.

INSTABRIGHT e-GAZETTE
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Available online at https://www.instabrightgazette.com

Ramirez, G., Shaw, S.T., & Maloney, E.A. (2021). Math Anxiety: Past Research, Promising Interventions, and Future Directions. *Educational Psychologist, 56*(1), 1–19. https://doi.org/10.1080/00461520.2020.1824968.

Schunk, D.H. & DiBenedetto, M.K. (2021). Self-efficacy and Human Motivation. *Advances in Motivation Science, 8*, 153–179. https://doi.org/10.1016/bs.adms.2020.10.001.

Schunk, D.H. & DiBenedetto, M.K. (2021). Self-efficacy and Human Motivation: A Review and Theoretical Integration. *Educational Psychology Review, 33*, 1–28.

Socio.health (2024). Interview Schedule. In Research Methodology in Population and Family Health Studies. Downloaded from https://socio.health/research-methodology-population-family-health/interview-schedules-collect-detailed-data/?utmsource=chatgpt. com#google_vignette on January 5, 2026.

Soqueña, A.C. (2021). Computer Self-Efficacy, Information Technology (IT) Competency and Teaching Effectiveness of Teachers Among Higher Education Institutions. Turkish Online Journal of Qualitative Inquiry, 12(6).

Sweller, J., Ayres, P., & Kalyuga, S. (2021). *Cognitive load theory* (2nd ed.). Springer.

Sweller, J., Ayres, P., & Kalyuga, S. (2021). Cognitive Load Theory and Instructional Design: Recent Developments. *Educational Psychology Review, 33*, 1–23.

UNESCO (2021). *Reimagining our futures together: A new social contract for education*. UNESCO Publishing.

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Usher, E.L. & Pajares, F. (2022). Sources of Self-efficacy in Mathematics: A Validation Study. *Contemporary Educational Psychology, 68*, 102035. https://doi.org/10.1016/j.cedpsych.2021.102035.

Usher, E.L. & Pajares, F. (2022). Sources of Self-efficacy in Mathematics: A Longitudinal Investigation. *Contemporary Educational Psychology, 70*, 102095.

Wang, S., Lukowski, S.L., Hart, S.A., Lyons, I.M., Thompson, L.A., Kovas, Y., Mazzocco, M.M.M., Plomin, R., & Petrill, S.A. (2021). Is Math Anxiety Always Bad for Math Learning? The Role of Math Motivation. *Psychological Science, 32*(7), 1138–1154. https://doi.org/10.1177/0956797621996653.

Wikipedia Contributors (2024). *Mathematics*. In *Wikipedia, The Free Encyclopedia*. https://en.wikipedia.org/wiki/Mathematics.

Zhang, J., Zhao, N., & Kong, Q.P. (2022). The Relationship between Mathematics Anxiety and Mathematics Performance: A Meta-analytic Investigation. *Frontiers in Psychology, 13*, 846243. https://doi.org/10.3389/fpsyg.2022.846243.

Zhang, J., Zhao, N., & Kong, Q.P. (2022). The Relationship between Mathematics Anxiety and Academic Performance: A Longitudinal Snalysis. *Frontiers in Psychology, 13*, 789562. https://doi.org/10.3389/fpsyg.2022.789562.

Zhang, J., Zhao, N., & Kong, Q.P. (2022). The Relationship between Mathematics Anxiety and Performance: A Meta-analysis. *Psychological Bulletin, 148*(5–6).