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A Case Study of Math Anxiety in High School Students: Assessment, Dynamics, and Intervention

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Abstract. Mathematics anxiety is a pervasive issue among adolescents, often impairing academic performance and emotional well-being. This study investigates the psychological profile of an Indonesian high school student experiencing mathematics anxiety following an academic transition from the UK to Indonesia and evaluates the effectiveness of a Cognitive Behavioral Therapy (CBT) intervention in reducing her anxiety. This research used a single-case qualitative design; data were gathered through psychological assessments (IST, DAT A5, SSCT, graphic tests), structured interviews with the participant, parents, and teachers, and behavioral observations. A five-session CBT intervention focusing on cognitive restructuring was conducted over two weeks. The assessment revealed average intellectual ability but significant cognitive distortions, physiological symptoms, and avoidance behaviors related to mathematics. Post-intervention findings demonstrated notable improvements in cognitive beliefs, emotional regulation, class participation, and help-seeking behavior. The participant, her teacher, and her mother all reported reduced anxiety and improved academic coping. The findings support the use of CBT as an effective and culturally adaptable approach for addressing mathematics anxiety in adolescents. The study emphasizes the role of cognitive patterns, emotional processes, and environmental influences in the development and resolution of academic anxiety. These insights are relevant for educators, school psychologists, and mental health professionals working in diverse educational settings. However, due to its single-case design and reliance on self-reported outcomes, the generalizability of the findings is limited and further research with larger and more diverse samples is recommended.

Keywords: Adolescents; Cognitive Behavioral Therapy; Cognitive Restructuring; Mathematics Anxiety

Abstrak. Kecemasan matematika merupakan masalah yang meluas di kalangan remaja dan kerap mengganggu kinerja akademik serta kesejahteraan emosional. Studi ini mengkaji profil psikologis seorang siswi SMA di Indonesia yang mengalami kecemasan matematika setelah mengalami transisi akademik dari Inggris ke Indonesia, serta mengevaluasi efektivitas intervensi Terapi Perilaku Kognitif (CBT) dalam meredakan kecemasannya. Penelitian ini menggunakan desain kualitatif studi kasus tunggal, dengan data yang dikumpulkan melalui asesmen psikologis (IST, DAT A5, SSCT, tes grafis), wawancara terstruktur dengan klien, orang tua, dan guru, serta observasi perilaku. Intervensi CBT lima sesi dengan fokus pada restrukturisasi kognitif dilakukan selama dua minggu. Hasil asesmen menunjukkan kemampuan intelektual yang rata-rata, namun ditemukan distorsi kognitif, gejala fisiologis, dan perilaku penghindaran yang signifikan terkait matematika. Temuan pasca-intervensi menunjukkan peningkatan yang nyata dalam keyakinan kognitif, regulasi emosi, partisipasi kelas, dan perilaku mencari bantuan. Klien, guru, dan ibunya melaporkan penurunan kecemasan dan peningkatan kemampuan menghadapi tantangan akademik. Temuan ini mendukung penggunaan CBT sebagai pendekatan yang efektif dan adaptif secara budaya untuk mengatasi kecemasan matematika pada remaja. Studi ini menekankan peran pola pikir kognitif, proses emosional, dan pengaruh lingkungan dalam perkembangan dan resolusi kecemasan akademik. Wawasan ini penting bagi pendidik, psikolog sekolah, dan profesional kesehatan mental yang bekerja di berbagai lingkungan pendidikan.

Kata kunci: Kecemasan Matematika; Remaja; Restrukturisasi Kognitif; Terapi Perilaku Kognitif

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INTRODUCTION

Mathematics anxiety is a well-documented phenomenon that significantly impacts students' academic performance and psychological well-being. It manifests as intense feelings of tension, apprehension, or fear that interfere with math performance, particularly in evaluative situations (Cuder et al., 2024; Martell et al., 2025). This condition is not merely a transient emotional reaction but a pervasive cognitive-affective response that impedes mathematical reasoning and contributes to academic underachievement (Luttenberger et al., 2018; McMullan et al., 2012). Research has shown that mathematics anxiety can stem from various factors, including previous negative experiences, teaching methods, cognitive distortions, and low self-efficacy (Kelly et al., 2020; Kilp-Kabel & Mädamürk, 2025; Zhou et al., 2025).

In Indonesia, limited empirical investigations have been conducted on individualized psychological interventions addressing mathematics anxiety among adolescents, especially within the context of educational transitions and intercultural academic experiences. Adolescents who have experienced transnational educational shifts, such as transitioning from Western to Eastern pedagogical systems, may encounter cognitive dissonance and emotional disturbances due to inconsistencies in instructional methods and expectations (Wang et al., 2023). In the context of mathematics education, such inconsistencies often manifest in differing pedagogical emphases—Western systems such as the UK tend to focus on conceptual understanding, student-centered inquiry, and formative assessment, while Eastern systems like Indonesia often emphasize procedural mastery, high-stakes testing, and curriculum pacing. These shifts can lead to confusion, reduced confidence, and emotional stress for students who struggle to adapt.

Such students may develop maladaptive beliefs regarding their mathematical competence, which may evolve into chronic anxiety that disrupts their academic engagement and emotional regulation. Although there are no comprehensive statistics on the number of Indonesian students experiencing math anxiety, partial data from other studies can adequately represent the state of math anxiety in Indonesia (Habibi et al., 2021). Research conducted by Khoirunnisa & Ulfah (2021) at a junior high school showed that math anxiety during learning activities was categorized as high among junior high school students in East Jakarta. Another research conducted by Utami & Warni (2019) at a high school in Karawang found that 38.62% of students experienced somatic anxiety and 35.14% experienced psychological anxiety in mathematics learning. These findings indicate that math anxiety is a phenomenon that exists in Indonesia.

Cognitive Behavioral Therapy (CBT) has emerged as a prominent evidence-based approach for managing various forms of anxiety, including mathematics anxiety (Asanjarani & Zarebahramabadi, 2021; Justicia-Galiano et al., 2017). CBT focuses on identifying and restructuring

dysfunctional beliefs and cognitive distortions, thus enabling individuals to adopt healthier thought patterns and behaviors. While previous studies have supported the efficacy of CBT in addressing academic-related anxiety (Doz et al., 2024), its application in real-life case contexts—particularly among Indonesian adolescents navigating cross-cultural educational experiences—remains underexplored.

This study presents a comprehensive case analysis of a 15-year-old Indonesian adolescent (pseudonym: LLM) who exhibited mathematics anxiety following her return from the United Kingdom's educational system to a more performance-oriented learning environment in Indonesia. Through a structured CBT-based intervention, the study aims to explore the psychological mechanisms underlying mathematics anxiety and assess the effectiveness of cognitive restructuring techniques in reducing the participant's anxiety symptoms and enhancing her academic coping strategies. The findings contribute to the growing body of literature on school-based psychological interventions and provide culturally contextualized insights for mental health professionals, educators, and policymakers.

METHOD

This study employed a qualitative case study design to explore the psychological dynamics and intervention process of an adolescent experiencing mathematics anxiety. The aim was to understand the cognitive, emotional, and behavioral components of the anxiety, and to examine the impact of a structured Cognitive Behavioral Therapy (CBT) intervention on alleviating symptoms. A multi-method assessment framework and a five-session CBT protocol were used to gather data and implement treatment.

Participant

The participant was a 15-year-old Indonesian female high school student (pseudonym: LLM) enrolled in Grade XI at a public high school in Yogyakarta. The participant had previously studied in the United Kingdom and experienced significant academic transition upon returning to Indonesia, particularly in mathematics. The case was selected due to her persistent distress and impaired academic functioning associated with mathematics anxiety. Informed consent was obtained from both the participant and her guardian. Ethical approval for this study was obtained from the institutional ethics review board of the university overseeing the project. Written informed consent was also obtained from both the participant and her legal guardian.

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Assessment Tools and Data Collection

A combination of psychological tests, interviews, and behavioral observations were used during the assessment phase to gain a comprehensive understanding of the participant's condition: (1) WISC-based IST (Intelligence Structure Test): To assess cognitive capacity and mathematical reasoning potential. The overall fit test of the WISC model showed a Chi-square value of 43.576 with a p-value of 0.066 (Tarigan & Fadillah, 2022). Hasil ini menunjukkan bahwa tes ini valid untuk digunakan; (2) DAT A5 (Differential Aptitude Test – Numerical Ability): To evaluate mathematical problem-solving ability. All items on the DAT A5 are valid at a one percent significance level. The reliability of this test is quite high, with a reliability coefficient of 0.915845, which means that this test can reveal numerical abilities(Suramto et al., 1996); (3) The graphic projective tests (DAP, HTP, Baum) were used to gain insight into the participant's self-perception, interpersonal dynamics, and unconscious emotional conflicts, particularly those related to academic pressure. These tools, while qualitative in nature, help identify latent anxiety through symbolic representations and themes of fear, inadequacy, or avoidance; (4) SSCT (Sacks Sentence Completion Test) was employed to explore underlying beliefs, emotional stressors, and internal conflicts related to self-concept and academic expectations, particularly those not easily verbalized in structured interviews. (5) Behavioral Observations: Conducted during testing, interviews, and school visits; (6) Semi-structured Interviews: Conducted with the participant, parents, and subject teacher to explore educational history, emotional patterns, and social functioning.

Procedure

The research was conducted in three main stages over a two-month period: (1) Initial Assessment (July 5–September 10, 2022): The participant underwent a series of psychological assessments and interviews to identify the root causes of her anxiety and evaluate her academic and socio-emotional functioning; (2) CBT Intervention (September 15–September 29, 2022): A five-session CBT protocol was administered, focusing on: (a) Psychoeducation on the relationship between thoughts, emotions, and behavior; (b) Identification of cognitive distortions; (c) Cognitive restructuring through guided reflection and behavioral experiments; (d) Reality testing of new beliefs in the academic setting; (e) Consolidation and termination with self-monitoring strategies; (3) Follow-up Evaluation: Participant progress was monitored through self-reports, interviews with teachers and parents, and behavioral changes in class participation.

Intervention Framework

The intervention was based on the Cognitive Behavioral Therapy (CBT) model, particularly the cognitive restructuring technique, as informed by Roth et al. (2002) and Dattilo (in Corey, 2005).

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Each session lasted 45–60 minutes and took place in informal, supportive environments such as school gardens and local cafés to reduce clinical pressure. The intervention plan was individualized based on antecedents (A), beliefs (B), and consequences (C), following the ABC framework of CBT. For example, an antecedent (A) such as receiving a low math score triggered the belief (B) "I will never be good at math," which led to the consequence (C) of the participant avoiding math classes and experiencing physiological anxiety during tests. The CBT intervention targeted these beliefs through cognitive restructuring.

Data Analysis

Data from interviews, observations, psychological assessments, and intervention notes were analyzed thematically (Jonathan et al., 2021). Thematic analysis was used to extract key patterns in the participant's thought processes, emotional experiences, behavioral manifestations, and post-intervention changes. Indicators of treatment success included reduction in physiological anxiety symptoms, increased classroom engagement in mathematics, improved self-efficacy beliefs, and verbal affirmation of changed cognitive perspectives.

RESULTS AND DISCUSSION

The results of this study are presented in three major sections: (1) findings from psychological assessment, (2) therapeutic outcomes from the CBT intervention, and (3) self-report and informant evaluations, (4) Comparative Summary of Pre- and Post-Intervention Changes, (5) Domain-Specific Narratives. These findings outline the cognitive, emotional, and behavioral characteristics of the participant prior to intervention and the observable changes that followed the therapeutic process.

Psychological Assessment Findings

Cognitive Functioning

The participant demonstrated an average intellectual capacity with a full-scale IQ score of 105 (avarage intelectual ability) on the IST scale . Her numerical reasoning, as measured by the DAT A5, fell within the upper-average range (WS: P. 65), indicating that the participant possessed adequate potential for mathematical comprehension despite performance concerns. However, the participant reported persistent difficulties in understanding new mathematical concepts and demonstrated low self-efficacy in mathematics based on the results of a semi-structured psychological interview.

Emotional Indicators

Self-reported anxiety was evident in somatic symptoms, such as heart palpitations and sweating during math tests, as well as cognitive distortions including catastrophic thinking ("No matter how hard I study, I will still fail") and low academic self-concept. Results from the SSCT and graphic

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projective tests revealed underlying emotional insecurities, perfectionism, and a tendency to internalize stress. The participant perceived mathematics as a threat to her academic identity, which intensified avoidance behaviors and emotional dysregulation.

Behavioral and Social Functioning

The participant was described as quiet, socially withdrawn in math-related settings, and reluctant to ask questions in class for fear of being judged. Teachers noted that although her general academic performance was average, she exhibited visible disengagement during math instruction. Her reluctance to interact in class contrasted with her behavior in other subjects where she was more confident and participative.

Therapeutic Outcomes: CBT Intervention

The five-session CBT intervention resulted in substantial improvements in the participant's cognitive patterns and emotional regulation: Session II–III: The participant successfully identified and reconstructed maladaptive beliefs, such as "Mathematics is inherently too difficult for me" and "I am bound to fail." These beliefs were replaced with more balanced alternatives, such as "I can improve with consistent effort" and "Asking for help does not mean I am unintelligent."

Session IV: During reality testing, the participant reported voluntarily asking her teacher a math-related question in class for the first time and was positively reinforced by the teacher's response. This served as concrete evidence to challenge her prior assumptions. Session V: The participant expressed a renewed sense of self-efficacy, reduced physiological anxiety during tests, and greater emotional acceptance of academic outcomes. She verbalized that her view of mathematics had shifted from a threatening task to a manageable challenge.

Self-Report and Informant Feedback

The participant, her mother, and her mathematics teacher all reported observable changes post-intervention: (1) The participant noted reduced anxiety, improved test performance, and greater willingness to participate in class; (2) Her mother observed improved emotional stability and study habits at home; (3) The teacher recognized a noticeable increase in classroom engagement and positive attitude toward mathematics. These improvements were attributed to the participant's increased cognitive flexibility and enhanced coping strategies developed during the CBT sessions.

Comparative Summary of Pre- and Post-Intervention Changes

To illustrate the effectiveness of the intervention, a comparison was made between the participant's condition before and after the CBT-based treatment. The comparison focuses on four key domains: emotional symptoms, cognitive distortions, behavioral expressions, and academic engagement.

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Table 1. Summary of Pre- and Post-Intervention Changes

Domain	Before Intervention	After Intervention
Emotional Symptoms	Frequently experienced heart palpitations and excessive sweating before math exams	Reported calmer emotional state before exams; somatic symptoms significantly reduced
Cognitive Distortions	"I will always fail math," "Even if I try, my score won't improve"	"I can succeed if I try," "Mathematics is important, but not the only determinant"
Behavioral Patterns	Avoided asking questions in math class; stayed passive even when confused	Initiated asking teacher questions; participated voluntarily in solving math problems
Academic Engagement	Ignored other subjects when focused on math; overcompensated due to fear of failing	Adopted a balanced learning approach; reduced obsession with math grades
Self-Efficacy Beliefs	Felt incapable of improving in mathematics; avoided challenges	Expressed optimism; accepted that progress takes time and effort

Domain-Specific Narratives

Emotional Regulation

The participant initially demonstrated clear somatic anxiety symptoms (heart palpitations, sweating) particularly during math tests or when anticipating results. These reactions, identified during initial interviews and self-reports, were alleviated after CBT sessions focused on cognitive reframing and exposure to evaluative situations. During follow-up, she stated feeling "more relaxed" and "less scared" when facing math assessments, adding, "I don't feel like I'm going to panic anymore when I see a math test."

Cognitive Reframing

In sessions II and III, the participant was guided through a structured reflection to identify maladaptive beliefs about mathematics. Using guided worksheets and Socratic questioning, she challenged irrational thoughts and developed alternative, empowering beliefs. By the end of the intervention, she internalized more balanced views, such as recognizing effort as a growth mechanism rather than solely focusing on outcomes.

Behavioral Change

Prior to intervention, the participant passively avoided engagement in math class due to fear of negative judgment. She consistently refrained from asking questions or responding to teacher prompts. In contrast, during the reality testing phase (Session IV), the participant reported initiating interaction with her math teacher and successfully receiving positive feedback. This reinforced her confidence and disrupted prior avoidance cycles. The teacher remarked, "She's starting to raise her hand and engage—something she rarely did before," noting a positive shift in the participant's classroom behavior.

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Academic Balance

Initially, the participant responded to poor math performance by over-focusing on mathematics and neglecting other subjects. This overcompensation was a defense against perceived failure. After the intervention, she began maintaining academic balance, as noted by her mother and confirmed by the participant. She also showed improved time management and re-engaged in social and recreational activities.

Perceptions from Informants

The mathematics teacher confirmed that the participant became more participative and confident in class discussions. Meanwhile, the mother observed increased emotional regulation, healthier study patterns, and reduced stress at home. Both informants described the changes as significant and consistent, suggesting lasting improvements beyond therapy sessions.

This study investigated the psychological dynamics of mathematics anxiety in an adolescent and examined the effectiveness of a cognitive-behavioral intervention in alleviating its symptoms. The results provide valuable insights into the interaction between cognitive distortions, emotional dysregulation, and avoidance behaviors within the context of academic performance—particularly in mathematics.

The participant's symptoms aligned closely with existing literature on mathematics anxiety. Many Reserach identified four primary domains of mathematics anxiety: somatic, cognitive, attitudinal, and content understanding (Megreya et al., 2024; Park et al., 2024). These dimensions were evident in the participant's experience, as she reported physiological symptoms (e.g., heart palpitations), cognitive distortions (e.g., catastrophic thinking), and negative attitudes toward math (e.g., low confidence and avoidance). Moreover, these findings reaffirm earlier research indicating that mathematics anxiety is not only a cognitive challenge but also a deeply emotional and behavioral one(Cheng et al., 2022).

One distinctive feature of this case is the participant's educational transition from the United Kingdom to Indonesia. The participant's anxiety appears to have intensified following her return from an educational system that emphasized understanding and individualized learning (Chilwell Academy) to one that emphasized content delivery and performance targets (Quintero et al., 2022). This shift may have exacerbated feelings of inadequacy and contributed to a sense of disconnection from the learning process. According to Lazarus and Folkman's (1984) cognitive appraisal theory, anxiety arises when individuals perceive an imbalance between environmental demands and their coping resources—a framework that aptly describes the participant's post-transition struggles. Although the Indonesian system posed initial challenges, the structured curriculum and clear performance expectations also provided a sense of academic direction for the participant. Over time,

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LLM began to appreciate the predictability of lesson planning and standardized assessments, which helped her re-establish study routines and monitor her own progress.

The intervention employed—Cognitive Behavioral Therapy (CBT)—was effective in modifying maladaptive thoughts and improving the participant's emotional and behavioral responses. Consistent with the findings of Hofmann et al., (2012), CBT's cognitive restructuring component allowed the participant to challenge and reframe distorted beliefs about her ability in mathematics. By replacing core irrational beliefs such as "I will always fail" with more adaptive cognitions such as "I can improve with practice," the participant experienced increased academic self-efficacy and reduced emotional reactivity.

The behavioral improvements observed—such as the participant voluntarily asking the teacher for clarification and engaging more in class—align with Bandura's (1997) theory of self-efficacy. As the participant's perceived competence increased, so did her willingness to take academic risks, reinforcing a positive feedback loop of motivation and engagement. This underscores the importance of addressing not just cognitive schemas but also behavioral avoidance, which is often reinforced by fear of failure or judgment (Beilock & Ramirez, 2011; Ramirez et al., 2013)

Another critical dimension observed was the role of social and familial support. The participant's mother demonstrated openness to psychological support and actively facilitated her daughter's learning environment. Previous research emphasizes that parental involvement and teacher responsiveness can buffer the negative effects of academic anxiety (Gunderson et al., 2012; Kiss & Vukovic, 2021; Park et al., 2024). In this case, the collaborative involvement of the mother and the teacher amplified the success of the intervention and may have contributed to the participant's improved engagement and academic adjustment.

Nevertheless, the study is not without limitations. The case study design restricts generalizability, and outcomes are based on self-report and observational measures rather than standardized anxiety inventories. Additionally, the intervention period was relatively short, and long-term follow-up was not conducted. Future studies could incorporate larger samples, control groups, and quantitative measures of anxiety reduction to validate the effectiveness of CBT in educational contexts more robustly. Future research should explore larger samples, long-term follow-up, and integration of quantitative measures—such as standardized mathematics anxiety scales (e.g., MARS or MAS), academic performance metrics like math test scores, and behavioral observation checklists for classroom engagement—to validate the effectiveness of CBT in educational contexts more robustly.

Despite these limitations, this study provides strong evidence for the potential efficacy of cognitive behavioral therapy (CBT) in reducing math anxiety and improving adaptive functioning

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among adolescents. It also highlights the important role of psychoeducation, teacher support, and cultural contextual understanding in psychological interventions. However, caution is needed in generalizing these findings to all high school students. Differences in school type (public vs. private), geographic context (urban vs. rural), and access to psychological support services may influence the expression of math anxiety and the feasibility of implementing CBT-based interventions. Therefore, educators, school psychologists, and parents should be encouraged to adopt a collaborative, student-centered approach, be sensitive to contextual disparities, and recognize anxiety as a cognitive and emotional barrier to learning.

CONCLUSSION

This case study highlights the significant impact of Cognitive Behavioral Therapy (CBT) in addressing mathematics anxiety among adolescents. The intervention proved effective in transforming maladaptive cognitive beliefs, reducing emotional and physiological symptoms of anxiety, and enhancing academic behaviors such as participation and help-seeking. The participant's improvement demonstrates how structured cognitive restructuring can empower students to overcome academic distress and regain a sense of control over their learning process.

Importantly, the case also underscores the interplay between cognitive patterns, emotional responses, and contextual factors such as educational transitions and teaching styles. Cultural sensitivity, collaborative support from parents and teachers, and individualized psychological intervention were crucial components of the participant's recovery. These findings reinforce the notion that academic anxiety is best approached through a holistic psychological framework that includes both intrapersonal and environmental dimensions.

While this study is limited by its single-case design, the results suggest promising implications for wider application of CBT in school-based mental health services. Future research should explore larger samples, long-term follow-up, and integration of quantitative measures to evaluate treatment outcomes more comprehensively. Nonetheless, this case provides a compelling example of how psychological intervention can effectively transform academic anxiety into self-efficacy and resilience in young learners.

Based on these findings, it is recommended that teachers receive training to identify early signs of mathematics anxiety and adopt supportive teaching strategies that reduce classroom pressure. Schools should establish stronger collaboration between subject teachers and school counselors or psychologists to ensure timely intervention for students showing emotional distress related to academic tasks. School-based CBT-informed counseling modules, particularly those focused on cognitive restructuring, can be adapted as part of guidance and counseling programs to support students experiencing learning-related anxiety.

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REFERENCES

Asanjarani, F., & Zarebahramabadi, M. (2021). Evaluating the effectiveness of cognitive-behavioral therapy on math self-concept and math anxiety of elementary school students. *Preventing School Failure: Alternative Education for Children and Youth*, *65*(3), 223–229. https://doi.org/10.1080/1045988X.2021.1888685

Beilock, S. L., & Ramirez, G. (2011). *On the Interplay of Emotion and Cognitive Control: Implications for Enhancing Academic Achievement* (pp. 137–169). https://doi.org/10.1016/B978-0-12-387691-1.00005-3

Cheng, D., Ren, B., Yu, X., Wang, H., Chen, Q., & Zhou, X. (2022). Math anxiety as an independent psychological construct among social-emotional attitudes: An exploratory factor analysis. *Annals of the New York Academy of Sciences*, *1517*(1), 191–202. https://doi.org/10.1111/nyas.14902

Cuder, A., Pellizzoni, S., Di Marco, M., Blason, C., Doz, E., Giofrè, D., & Passolunghi, M. C. (2024). The impact of math anxiety and self-efficacy in middle school STEM choices: A 3-year longitudinal study. *British Journal of Educational Psychology*, *94*(4), 1091–1108. https://doi.org/10.1111/bjep.12707

Doz, E., Cuder, A., Pellizzoni, S., Granello, F., & Passolunghi, M. C. (2024). The interplay between ego-resiliency, math anxiety and working memory in math achievement. *Psychological Research*, *88*(8), 2401–2415. https://doi.org/10.1007/s00426-024-01995-0

Gunderson, E. A., Ramirez, G., Levine, S. C., & Beilock, S. L. (2012). The role of parents and teachers in the development of gender-related math attitudes. *Sex Roles*, *66*(3–4), 153–166. https://doi.org/10.1007/s11199-011-9996-2

Habibi, M., Wahyuni, N., Rusliah, N., Ilham, M., & Fitri, I. (2021). The effect of mathematics anxiety and intelligence on students' logical thinking ability. *Edumatika : Jurnal Riset Pendidikan Matematika*, *4*(1), 77–89. https://doi.org/10.32939/ejrpm.v4i1.1102

Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research*, *36*(5), 427–440. https://doi.org/10.1007/s10608-012-9476-1

Jonathan, A. S., Paul, F., & Michael, L. (2021). *Interpretative Phenomenological Analysis: Theory, Method and Research* (Second). Sage Publication.

Justicia-Galiano, M. J., Martín-Puga, M. E., Linares, R., & Pelegrina, S. (2017). Math anxiety and math performance in children: The mediating roles of working memory and math self-concept. *British Journal of Educational Psychology*, *87*(4), 573–589. https://doi.org/10.1111/bjep.12165

Kelly, S., Romero, A., Morrow, J. A., Denton, Z., & Ducking, J. (2020). Instructor misbehaviors and math anxiety. *Communication Reports*, *33*(1), 27–40. https://doi.org/10.1080/08934215.2019.1675737

Khoirunnisa, K., & Ulfah, S. (2021). Profil kecemasan matematika dan motivasi belajar matematika siswa pada pembelajaran daring. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *5*(3), 2238–2245. https://doi.org/10.31004/cendekia.v5i3.831

Kilp-Kabel, T., & Mädamürk, K. (2025). Expectancies, values, and task persistence can alleviate the negative effects of math anxiety on math performance. *European Journal of Psychology of Education*, *40*(1), 17. https://doi.org/10.1007/s10212-024-00928-0

Kiss, A. J., & Vukovic, R. (2021). Exploring educational engagement for parents with math anxiety. *Psychology in the Schools*, *58*(2), 364–376. https://doi.org/10.1002/pits.22451

Luttenberger, S., Wimmer, S., & Paechter, M. (2018). Spotlight on math anxiety. *Psychology Research and Behavior Management*, *Volume 11*, 311–322. https://doi.org/10.2147/PRBM.S141421

Martell, R. N., Daker, R. J., Sokolowski, H. M., Ansari, D., & Lyons, I. M. (2025). Implications of neural integration of math and spatial experiences for math ability and math anxiety. *Psychological Research*, *89*(1), 34. https://doi.org/10.1007/s00426-024-02063-3

McMullan, M., Jones, R., & Lea, S. (2012). Math anxiety, self-efficacy, and ability in British undergraduate nursing students. *Research in Nursing & Health*, *35*(2), 178–186. https://doi.org/10.1002/nur.21460

Megreya, A. M., Al-Emadi, A. A., Al-Ahmadi, A. M., Moustafa, A. A., & Szűcs, D. (2024). A large-scale study on the prevalence of math anxiety in Qatar. *British Journal of Educational Psychology*, *94*(2), 539–556. https://doi.org/10.1111/bjep.12662

Park, J., Ramirez, G., & Park, D. (2024). Effect of preschool teacher's math anxiety on teaching efficacy and classroom engagement in math. *Psychology in the Schools*, *61*(6), 2600–2611. https://doi.org/10.1002/pits.23182

Quintero, M., Hasty, L., Li, T., Song, S., & Wang, Z. (2022). A multidimensional examination of math anxiety and engagement on math achievement. *British Journal of Educational Psychology*, *92*(3), 955–973. https://doi.org/10.1111/bjep.12482

Ramirez, G., Gunderson, E. A., Levine, S. C., & Beilock, S. L. (2013). Math anxiety, working memory, and math achievement in early elementary school. *Journal of Cognition and Development*, *14*(2), 187–202. https://doi.org/10.1080/15248372.2012.664593

Suramto, Purba, H., & Amitya, K. (1996). Validitas, reliabilitas dan nilai standar dari tes pemahaman, tes penalaran dan tes berhitung. *Jurnal Psikologi*, *2*, 74–83. https://journal.ugm.ac.id/jpsi/article/view/10051

Tarigan, M., & Fadillah. (2022). Uji validitas konstruk tes Wechsler intelligence scale for children (WISC). *Jurnal Studia Insania*, *9*(2), 168. https://doi.org/10.18592/jsi.v9i2.5599

Utami, A. H., & Warmi, A. (2020). Analisis kesulitan belajar ditinjau dari rasa kecemasan matematika. *Prosiding Sesiomadika (Seminar Nasional Matematika dan Pendidikan Matematika)*, *2*(1c), 617–622. https://journal.unsika.ac.id/index.php/sesiomadika/article/view/2660

Wang, H., Burić, I., Chang, M.-L., & Gross, J. J. (2023). Teachers' emotion regulation and related environmental, personal, instructional, and well-being factors: A meta-analysis. *Social Psychology of Education*, *26*(6), 1651–1696. https://doi.org/10.1007/s11218-023-09810-1

Zhou, Y., Jing, B., Zhang, J., Pi, Z., & Ma, H. (2025). Parental anxiety and math engagement: A moderated mediation model of math anxiety and perceived teacher support. *Psychology in the Schools*, *62*(5), 1499–1509. https://doi.org/10.1002/pits.23403