

ABSTRAK

Omry Tarigan, 231442203, 2025. Analisis Kecemasan Matematika Siswa SMP Advent Bandar Lampung Ditinjau Dari Sudut Pandang Neurosains Dan Upaya Mengatasinya. Program Studi Magister Pendidikan Matematika dan Ilmu Pengetahuan Alam, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Sanata Dharma, Yogyakarta

Penelitian ini bertujuan untuk (1) Mengetahui tingkat kecemasan matematika siswa, SMP Advent Bandar Lampung berdasarkan hasil kuesioner kecemasan matematika (2) mengetahui aspek dan faktor penyebab kecemasan matematika siswa SMP Advent Bandar Lampung ditinjau dari neurosains, (3) mengembangkan upaya mengatasi kecemasan matematika dengan pendekatan neurosains dalam pembelajaran matematika.

Penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus tunggal yang melibatkan sepuluh siswa sebagai subjek. Data dikumpulkan melalui kuesioner, wawancara, observasi, dan dokumentasi.

Hasil penelitian menunjukkan bahwa berdasarkan kuesioner, 62,6% siswa mengalami kecemasan sedang dan 21,87% mengalami kecemasan tinggi. Aspek aktivitas emosional yang terkait dengan fungsi amigdala menunjukkan bahwa sebagian besar siswa mengalami reaksi emosional negatif ketika menghadapi pembelajaran matematika. Temuan penelitian menunjukkan bahwa kecemasan yang dialami siswa tidak hanya muncul dalam perasaan takut akan angka atau operasi hitung, tetapi melibatkan interaksi kompleks antara proses emosional, kognitif dan fisiologis. Aspek emosional kecemasan tampak melalui perasaan gelisah, takut salah, atau khawatir nilai buruk. Secara kognitif, kecemasan berdampak pada keyakinan rendah (*low self-efficacy*) dan rumusan pikiran negatif. Aspek fisiologis kecemasan juga muncul kuat dalam observasi dan wawancara, beberapa siswa mengalami reaksi tubuh jantung berdebar, tangan dingin, mual saat diminta mengerjakan soal tanpa persiapan khusus. Aspek regulasi diri sebagian siswa kurang mampu mengendalikan situasi emosional. Selain faktor neurobiologis pengaruh faktor sosial khususnya interaksi antar teman dan gaya mengajar guru. Kecemasan dalam penelitian ini sebagai fenomena multidimensional kecemasan matematika bukan sekedar masalah tidak suka matematika tetapi tantangan neuropsikologis yang memerlukan intervensi terpadu dan berbasis neurosains.

Upaya untuk mengatasi kecemasan matematika dengan strategi Intervensi *mindful breathing* yang diterapkan dalam enam pertemuan selama 6 hari memberikan dampak positif terhadap penurunan kecemasan matematika siswa, baik secara emosional, kognitif, maupun fisiologis. Kondisi emosional yang lebih stabil berpengaruh pada peningkatan capaian akademik, dengan rata-rata nilai tes formatif sebesar 91,5 dan 80% siswa mencapai ketuntasan belajar.

Kata kunci: Kecemasan, matematika, *mindful breathing*, neurosains

ABSTRACT

Omry Tarigan, 231442203, 2025. Analysis of Mathematics Anxiety in Students at Bandar Lampung Adventist Junior High School from a Neuroscience Perspective and Efforts to Overcome It. Master's Program in Mathematics and Natural Sciences Education, Faculty of Teacher Training and Education, Sanata Dharma University, Yogyakarta

This study aims to (1) determine the level of mathematics anxiety in students at Bandar Lampung Adventist Junior High School based on the results of a mathematics anxiety questionnaire.

(2) identify aspects and factors causing mathematics anxiety in Bandar Lampung Adventist Junior High School students from a neuroscience perspective, and (3) develop efforts to overcome mathematics anxiety using a neuroscience approach in mathematics learning.

This study used a qualitative approach with a single case study design involving ten students. Data were collected through questionnaires, interviews, observations, and documentation.

The results showed that based on the questionnaire, 62.6% of students experienced moderate anxiety and 21.87% experienced high anxiety. Aspects of emotional activity related to amygdala function indicate that most students experience negative emotional reactions when facing mathematics learning. Research findings indicate that students' anxiety is not limited to fear of numbers or arithmetic operations, but involves a complex interaction between emotional, cognitive, and physiological processes. The emotional aspect of anxiety is evident through feelings of restlessness, fear of making mistakes, or worry about getting a bad grade. Cognitively, anxiety impacts low self-efficacy and negative thought patterns. The physiological aspect of anxiety also emerged strongly in observations and interviews, where some students experienced physical reactions such as heart palpitations, cold hands, and nausea when asked to work on problems without special preparation. Some students' self-regulation abilities were limited when it came to emotional control. In addition to neurobiological factors, social factors, particularly peer interactions and the teacher's teaching style, also play a role. Anxiety, as a multidimensional phenomenon, is not simply a dislike of mathematics but a neuropsychological challenge that requires integrated, neuroscience-based intervention.

Efforts to address math anxiety using a mindful breathing intervention strategy implemented in six sessions over six days had a positive impact on reducing students' math anxiety, both emotionally, cognitively, and physiologically. A more stable emotional state resulted in improved academic achievement, with an average formative test score of 91.5 and 80% of students achieving learning mastery.

Keywords: Anxiety, mathematics, mindful breathing, neuroscience