

# BEHAVIORAL CHARACTERISTICS AND COGNITIVE PROCESSES OF INDIVIDUALS WITH ADVANCED MATHEMATICAL ANALYTICAL SKILLS

Jiratchayapa Bhijakkanarin<sup>1</sup> and Sanya Kenaphoom<sup>2</sup>

<sup>1</sup>Maharakham University, THAILAND

<sup>2</sup>Rajabhat Maha Sarakham University, THAILAND  
zumsa\_17@hotmail.com (Corresponding author)

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## ABSTRACT

**Background:** The lack of longitudinal studies on the evolution of mathematical skills over time is a major research gap. Longitudinal studies have the potential to shed light on critical developmental stages and facilitate early educational support. The majority of research offers a static perspective, neglecting how skills change with practice and experience.

**Aims:** This paper aims to explore the cognitive and behavioral traits of individuals with high mathematical proficiency.

**Methodology:** The study employs a documentary research methodology to examine mathematical cognition through an examination of pre-existing texts. It uses academic databases to collect data, content, and theme analysis to analyze it, and a focuses on advanced mathematical skills to identify themes and gaps.

**Results:** Outstanding mathematicians frequently exhibit sophisticated analytical reasoning, pattern recognition, and complex problem decomposition. They use advanced techniques for mental computation and abstract reasoning, displaying remarkable persistence, concentration, and intrinsic motivation. These discoveries broaden our knowledge of the behavioral and cognitive characteristics linked to mathematical aptitude and offer useful implications for talent development and individualized teaching strategies.

**Conclusion:** The results show that advanced analytical abilities and a persistent, focused work ethic are characteristics of exceptional mathematicians that are critical to their success. These revelations deepen our knowledge of mathematical aptitude and offer insightful recommendations for fostering and advancing these skills through specialized teaching techniques.

**Keywords:** Behavioral Characteristics, Cognitive Processes, Mathematical Analytical Skills

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