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Does Mindfulness Foster Grit in Young Learners? Evidence from Islamic Primary Schools across Sociodemographic Contexts

Santy Andrianie[1*], Arifah Wulandari[1], Elwas Berdha Krismona[1], Zaida Nor Zainudin[2], Nor Zaiham Midawati Abdullah[3], Khairul Bariyyah[4], Mayobi Aluzo Putra[1]
[1]Depatment of Guidance and Counseling, Universitas Sebelas Maret, Indonesia
[2]Counseling Education and Counseling Psychology, Universiti Putra Malaysia, Malaysia
[3]Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam, Brunei Darussalam
[4]Depatment of Guidance and Counseling, Universitas Negeri Malang, Indonesia
✉ Author Corresponding: santy.andrianie@staff.uns.ac.id

ABSTRACT

This study investigates whether mindfulness fosters grit among Islamic elementary school students across diverse socio-demographic contexts in Indonesia. The growing need for non-cognitive competencies, such as perseverance and self-regulation, underscores the importance of identifying psychological factors that support students' academic persistence. Therefore, this research aims to examine the predictive role of mindfulness for grit and explore variations in both constructs by gender, residential area (rural–urban), and province. A quantitative cross-sectional design was employed involving 535 students from Islamic primary schools across 24 provinces. Data were collected using adapted versions of the Child and Adolescent Mindfulness Measure and an elementary school grit scale, both demonstrating acceptable validity and internal consistency reliability in the Indonesian context. Statistical analyses included descriptive statistics, independent samples t-tests, one-way ANOVA, and simple linear regression. Results indicate that most students demonstrate moderate levels of mindfulness and grit, with significant differences across gender, region, and province. Female and rural students score higher on mindfulness and grit. Regression analysis reveals that mindfulness significantly predicts grit ($\beta = 0.440$, $p < .001$), explaining 19.4% of the variance, suggesting that present moment awareness and emotional regulation contribute to students' perseverance. These findings imply that cultivating mindfulness within Islamic educational settings may strengthen character education and enhance academic resilience. Future research should use longitudinal and experimental designs, include multi-informant data, and consider contextual factors to better understand how mindfulness supports grit development.

Keywords: Grit; Mindfulness; Psychological Resilience; Early Learners; Islamic Elementary School; Socio-Demographic Factors.

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1. INTRODUCTION

In recent years, global conditions have underscored the need for non-cognitive abilities, including characteristics, social skills, and personality traits, as the foundation for children's academic success and well-being (Li et al., 2023; Morando & Platt, 2022). Non-cognitive abilities are becoming increasingly important today because they contribute to better academic outcomes and determine long-term success for individuals (Sultanova et al., 2024; Zynuddin et al., 2023).

One non-cognitive aspect relevant to current-era needs is grit, defined as the perseverance and tenacity individuals possess to remain committed to long-term goals despite difficulties (Andrianie et al., 2025; Duckworth et al., 2021).

Individuals with grit are motivated to learn, persistent in achieving learning goals, and resilient and persistent in the learning process (Bozgün & Akın-köstereliođlu, 2021; Li & Li, 2021). However, grit does not emerge immediately; it can develop early in elementary school (Sutter et al., 2022). For elementary school students, the need for grit becomes even more relevant, as elementary school serves as the foundation for developing study habits, character, and psychological preparation to meet academic demands at the next level (Tondang et al., 2025). In line with this, grit shows a positive correlation with student achievement and interest (Kaya & Karakoc, 2022), helping students remain persistent and pursue success despite various challenges.

Nowadays, digital technology is used not only for communication and information needs but also for instant recreation, including among elementary school students (Barokah et al., 2025; Borgonovi et al., 2023). This condition certainly affects students' academic achievement, but also their motivation and resilience in learning. The use of gadgets by elementary school students provides an instant escape from boredom during learning, leading to a loss of motivation and interest in learning (Amez & Stijn, 2020; Ilahi et al., 2025). Elementary school students, who have a relatively short attention span, are also more easily tempted to use their devices for gaming (Cheung, 2021). Easy access to digital entertainment causes students to prefer activities that provide satisfaction and enjoyment over persisting with academic tasks, and gives up easily when they encounter difficulties in completing assigned tasks. The ease of access to instant gratification from digital entertainment tends to weaken students' ability to persist in the learning process, which requires patience and continuous effort. This situation causes students to give up easily, be reluctant to commit to tasks, and have a reduced fighting spirit in achieving success (Sunday et al., 2021; Tülüba¸s et al., 2023).

Based on this phenomenon, the need for grit is increasing. Moreover, elementary school is a period of self-management, emotional awareness, and the development of motivation (Trautner & Pinquart, 2025). During this stage, students not only acquire academic skills but also learn to respond to failure (Kholili et al., 2025). However, grit is not a skill that can be acquired automatically, so appropriate interventions are needed to develop grit in elementary school students that align with the factors that influence grit. One factor that influences grit is mindfulness (Jarukasemthawee et al., 2021). Mindfulness is an individual's awareness of experiences or events in the present moment without judgment (Kabat-Zinn, 2015; Krismona, 2024). Students who learn with focus and attention, without judgment or distraction from others, are considered less prone to demotivation and boredom in learning, and thus more perseverant in achieving their goals (Hosseini et al., 2024).

Mindfulness has the potential to strengthen grit through its non-judgmental awareness, enabling it to divert attention from stressors (Christopher et al., 2022). Consistently, mindfulness helps students develop awareness of impulsive urges, improve self-control, and foster an acceptance of discomfort during the learning process (Suárez-García et al., 2020). This allows students to better delay immediate gratification, focus on learning activities, and respond more adaptively to failure. In this sense, mindfulness functions as a self-regulatory mechanism that supports sustained effort and long-term goal commitment, which are central components of grit. Furthermore, this regulatory capacity may be particularly important in educational settings, where students are required to persist despite challenges, distractions, and varying socio-demographic pressures.

Another gap in this research lies in the neglect of grit and mindfulness within broader cultural and spiritual frameworks, particularly in religious-based educational settings (Aldbyani, 2025). The majority of research on grit and mindfulness has been conducted in Western educational settings. In contrast, the values of patience and self-control, which align with the concepts of grit and mindfulness, are neglected in religion-based schools. Similarly, previous research has not addressed individual demographics, even though children's experiences are shaped by interrelated factors such as gender and geographic location (Rizqi et al., 2022; Bando et al., 2024). The absence of such contextual and demographic integration limits the explanatory power of existing models. Therefore, this study addresses an important gap by examining mindfulness and grit within Islamic primary education across diverse sociodemographic contexts, while simultaneously responding to the need for more context-sensitive and ecologically grounded evidence in the field.

This study aims to investigate the role of mindfulness in grit among Islamic elementary school students in Indonesia, across various demographic contexts. This research contributes to the expansion of grit studies in elementary education, enriches the study of the relationship between grit and mindfulness, and provides evidence grounded in the context of Islamic elementary education that offers insights relevant to global studies.

2. METHODS

2.1 Research Design

This study used a quantitative, cross-sectional design. This design was chosen because it allows researchers to test predictive relationships between psychological variables at a single measurement point and to identify variations in constructs based on respondents' sociodemographic characteristics (Wang & Cheng, 2020). This design is often used to test predictive models of mindfulness on various academic outcomes, including grit and learning resilience, particularly in child and adolescent populations (Datu & Fincham, 2022). In this study, a cross-sectional design was chosen to test the predictive relationship between mindfulness and grit, while identifying differences in the levels of the two constructs based on the sociodemographic characteristics of elementary school students, including gender, area of residence (rural and urban), and province of origin.

2.2 Participants

This study involved 535 elementary school students in Indonesia. In this study, the respondents were students in grades 4–6 of primary school, typically aged between 10 and 12 years, representing late childhood developmental stages. Respondents consisted of 266 (49.7%) male students and 269 (50.3%) female students. This indicates a relatively balanced gender distribution in this study. A relatively balanced gender distribution can enhance the comparative validity of analyses of gender differences (Wandschneider et al., 2022). Geographically, respondents came from 24 provinces in Indonesia, including Bali, DI Yogyakarta, DKI Jakarta, Gorontalo, West Java, Central Java, East Java, West Kalimantan, Central Kalimantan, East Kalimantan, North Kalimantan, Lampung, Maluku, West Nusa Tenggara, East Nusa Tenggara, Papua, Riau, South Sulawesi, Central Sulawesi, Southeast Sulawesi, North Sulawesi, West Sumatra, South Sumatra, and North Sumatra, as shown in Figure 1.

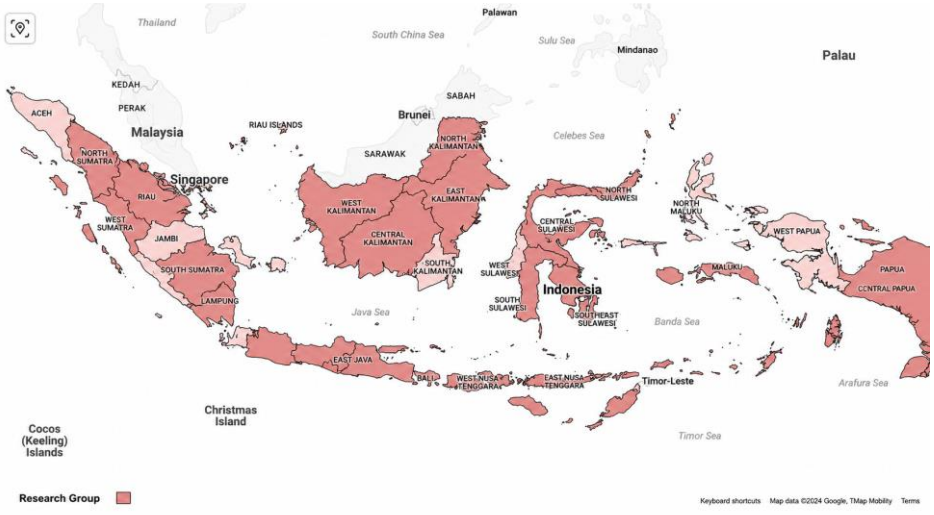


Figure 1. Distribution of Respondents' Provinces of Origin

Furthermore, respondents included students living in both urban and rural areas, allowing for analysis of differences based on residential context. Participant selection was conducted using purposive sampling. This technique was used to ensure that respondents met relevant cognitive and administrative developmental criteria for completing the instrument (Creswell & Creswell, 2018; Etikan & Bala, 2017). The sample selection criteria in this study were students registered at Islamic Elementary Schools, within the elementary school age range, who obtained permission from the school and parental/guardian approval to participate in the study.

2.3 Instrument

a. Mindfulness Scale

Mindfulness was measured using a mindfulness scale adapted to the Indonesian cultural and language context from the Child and Adolescent Mindfulness Measure (Greco et al., 2011). The instrument consists of 10 items rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating higher levels of mindfulness. This scale measures students' ability to focus on present-moment experiences, be aware of thoughts and emotions, and respond reflectively to experiences. The adaptation process into Indonesian involved translation and cultural adjustment procedures, and the instrument has demonstrated acceptable validity and reliability for use in the Indonesian context. Theoretically, mindfulness in children is understood as the capacity to pay full attention to the present experience with an attitude of acceptance (Greco et al., 2011; Zoogman et al., 2015). In the last decade, mindfulness in children has been linked to improved emotional regulation, attentional control, and academic well-being (Dunning et al., 2022; Klingbeil et al., 2017).

b. Grit Scale

Grit in Islamic Elementary School students was measured using a grit scale adapted to suit Indonesian culture and language from the Grit Scale for Elementary School (Jie et al., 2024). The instrument consists of 10 items rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores reflecting higher levels of grit. The adaptation process into Indonesian involved translation and cultural adjustment procedures, and the instrument has demonstrated acceptable validity and reliability for use in the Indonesian context. Literature indicates that, in elementary school-aged

children, the perseverance dimension is more stable than the consistency of interest, due to cognitive development and interest exploration (Valdez & Datu, 2021). Furthermore, research conducted by Oriol et al. (2017) found that grit in children is positively correlated with self-regulation, attentional control, and academic resilience. Validity and reliability tests were conducted to ensure the instrument's factor structure and internal consistency were appropriate for the Indonesian population, given the importance of psychometric validation in cross-cultural studies (Hair et al., 2021).

2.4 Data Collection Procedures

The data collection process was conducted offline in collaboration with schools in each province. The questionnaire was distributed to students in a structured manner, with the assistance of teachers or researchers, to ensure item understanding and to take into account the age characteristics of the respondents. All participants were informed of the research objectives, data confidentiality, and the right to withdraw from the study at any time without consequences. This study aligns with methodological recommendations for research on elementary school-aged children, in which the presence of a facilitator improves understanding of instrument items and reduces response bias due to limited literacy (Klingbeil et al., 2017). A structured approach to instrument administration is also essential to maintain internal validity and minimize measurement error in the child population (Dunning et al., 2022).

2.5 Data Analysis

The collected data were analyzed using JASP. The analysis was conducted in several stages. First, descriptive statistics were used to describe the distributions of students' mindfulness and grit levels. Second, an Independent Samples t-test was used to examine differences in mindfulness and grit based on gender and region of residence. Third, a One-Way ANOVA was used to examine differences in mindfulness and grit levels across respondents' provinces of origin. Finally, a simple linear regression analysis was conducted to examine the role of mindfulness as a predictor of grit in elementary school students. All statistical tests used a significance level of $\alpha = 0.05$.

Prior to conducting inferential analyses, statistical assumptions were systematically examined to ensure the appropriateness of the applied tests. Normality of the data distribution was assessed using the Shapiro–Wilk test and supported by skewness and kurtosis indices. Homogeneity of variance was evaluated using Levene's test before performing t-tests and ANOVA. In addition, linearity and homoscedasticity assumptions were examined prior to regression analysis through scatterplot inspection. Multicollinearity was not a concern given the use of a single predictor variable. These procedures were undertaken to enhance the methodological rigor and ensure that the inferential analyses were conducted under appropriate statistical conditions.

2.6 Ethical Considerations

This research was conducted with children's ethical principles in mind. Written consent was obtained from the school, and written assent from the students' parents or guardians. Respondents' identities were kept confidential and anonymous. This study ensured that no physical or psychological harm was caused to respondents during the research process.

3. RESULT AND DISCUSSION

In this study, the analysis focused not only on the effect of mindfulness on grit but also on differences in grit and mindfulness levels among Islamic elementary school students. Furthermore, differences in grit and mindfulness levels were analyzed across three demographic characteristics: gender, area of residence (rural or urban), and province in Indonesia.

3.1 Levels of Mindfulness and Grit in Elementary School Students

Based on this analysis, the levels of full awareness and perseverance among students at Islamic elementary schools are as shown in Table 1.

Table 1. Mindfulness and Grit Levels in Elementary School Students

Category	Mindfulness		Grit	
	Frequency	Persentage (%)	Frequency	Persentage (%)
Very High	33	6%	58	11%
High	129	24%	84	16%
Moderate	209	39%	241	45%
Low	132	25%	115	21%
Very Low	32	6%	37	7%

Table 1 illustrates the levels of mindfulness and grit among Islamic Elementary School students, which show quite wide variation, ranging from very high to very low, with a significant proportion still in the low to very low categories. Based on the descriptive statistical analysis, the levels of mindfulness and grit among Islamic Elementary School students show wide variation, ranging from very high to very low. In the mindfulness aspect, the majority of students are in the medium to low category, while in grit, most are in the medium category, with a still quite large proportion in the low to very low categories. This pattern indicates that neither mindfulness nor grit has developed optimally or evenly among all Islamic Elementary School students. The results of this study indicate significant differences in levels of mindfulness and grit between male and female students in Islamic elementary schools. This finding confirms that gender is a sociodemographic factor associated with variations in these two constructs starting in elementary school, when psychological capacities are still in their early developmental stages and are heavily influenced by social experiences and educational contexts (Guo et al., 2023).

Differences in mindfulness levels between male and female students can be understood through a child development perspective that highlights differences in attention patterns and emotional experiences from an early age. Girls generally show a greater tendency to attend to internal experiences and to express emotions reflectively, while boys more often show an external orientation and motor activity (Li et al., 2026). These differences do not reflect specific psychological advantages or disadvantages, but rather developmental variations influenced by different socialization patterns, environmental expectations, and learning experiences.

In the context of Islamic elementary schools, these findings are relevant because the process of habituating religious values and practices often interacts with prevailing gender norms in school and family environments (Polson et al., 2025). Girls are more directed to demonstrate calm, obedient, and reflective behavior, which can indirectly support the development of mindfulness. Conversely, boys are often given greater space for physical expression and active exploration, which can influence how they manage attention and experience awareness in formal learning contexts (Rençber & Ulutaşdemir, 2026).

Bigger differences were observed in grit, with female students demonstrating higher levels of persistence than male students. Developmentally, this could be linked to differences in task orientation and resilience in the face of academic demands. Elementary school-aged girls

generally demonstrate greater consistency in completing tasks and following learning regimens. At the same time, boys are more prone to fluctuations in interest and engagement, particularly when tasks require repeated effort and patience (Nannim & Mosia, 2026).

In Islamic education, values such as sharia, responsibility, and sincerity are taught to all students regardless of gender. However, the results of this study indicate that the internalization of these values as psychological grit can differ between male and female students. This indicates that the development of perseverance is influenced not only by the values taught but also by how these values are experienced and interpreted in students' daily learning, shaped by their developmental characteristics and social experiences.

3.2 Differences in Mindfulness and Grit Levels Based on Gender

Furthermore, the analysis of differences in mindfulness and grit levels among elementary school students based on gender using the Independent Samples T-Test showed the following results.

Table 2. Differences in Mindfulness and Grit Levels Based on Gender

Independent Samples T-Test			
	t	**df**	**p**
Mindfulness	-8.626	533	< .001
Grit	-27.62	533	< .001

The results of the analysis as presented in Table 2, reveal a statistically significant difference between male and female students in both aspects of mindfulness and grit. In the case of mindfulness, the value of t = -8.626 was obtained with the significance value of p = 0.001 (p < 0.005), indicating that there is a difference in the level of mindfulness between male and female students. In the same way, the test result for grit shows that the t value is -27.62 with the significance level p = 0.001 (p < 0.005) suggesting that the difference in the level of grit based on gender is highly statistically significant. The findings confirm that gender is a sociodemographic factor that is significantly associated with variations in the levels of mindfulness and grit among elementary school students.

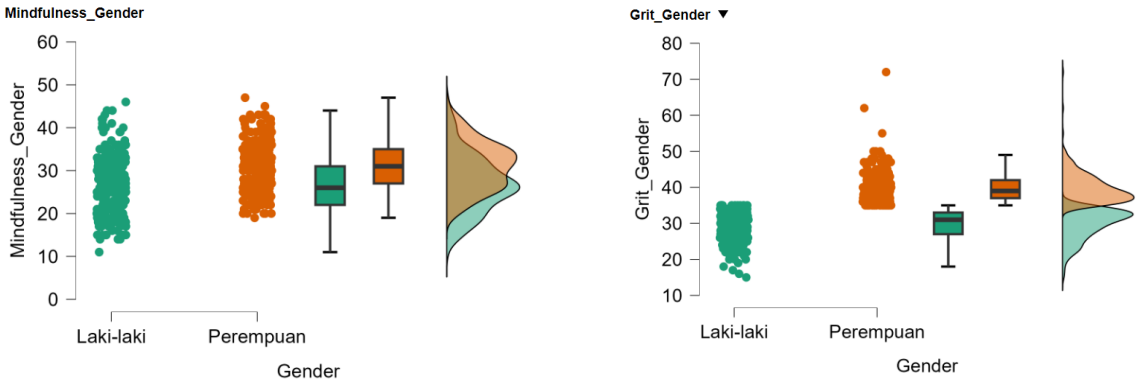


Figure 2. Data Distribution of Differences in Mindfulness and Grit Levels by Gender

Figure 2 shows the distribution of mindfulness and grit levels among Islamic Elementary School students by gender. For mindfulness, female students tend to score higher than male students, as evidenced by the larger median and interquartile ranges in the female group. The

distribution of male students' mindfulness scores is more concentrated in the lower range, with a relatively wider spread. For grit, the differences are more pronounced: female students show higher scores and a distribution more concentrated in the mid-to-high range, while male students tend to have lower scores and wider variation.

These differences in distribution indicate that variations in mindfulness and grit levels occur not only in average scores but also in the distribution of scores across genders (Gallardo-Estrada et al., 2024). Female students show more consistent tendencies across both constructs, while male students exhibit greater fluctuations (Lin et al., 2024; Usher et al., 2019). This pattern indicates differences in experiences or developmental dynamics between the two groups within the context of Islamic elementary school learning. Overall, this visualization confirms the statistical test results, which showed significant differences based on gender. These findings confirm that mindfulness and grit in Islamic elementary school students develop differently between boys and girls, both in terms of score trends and the stability of their distributions.

3.3 Differences in Mindfulness and Grit Levels Based on Residential Area

Furthermore, differences in the levels of full awareness and persistence based on residential area (rural and urban) are shown in Table 3.

Table 3. Differences in Mindfulness and Grit Levels Based on Residential Area

Independent Samples T-Test			
	t	**df**	**p**
Mindfulness	8.444	533	< .001
Grit	27.70	533	< .001

Table 3 shows a statistically significant difference between students living in rural and urban areas in both mindfulness and grit aspects. In the mindfulness aspect, a t-value of 8.444 was obtained, with a significance value of $p = 0.001$ ($p < 0.005$), indicating a difference in mindfulness levels between students living in rural and urban areas. Similarly, in the grit aspect, the test results show a t-value of 27.70 with a significance level of $p = 0.001$ ($p < 0.005$), indicating a statistically significant difference in grit levels across areas where students live.

The analysis results show significant differences in mindfulness and grit between Islamic elementary school students living in rural and urban areas. This finding confirms that the residential area is a sociodemographic factor associated with variations in both constructs from elementary school age onward (Adams & Khojasteh, 2018)**.** This difference suggests that everyday environmental experiences contribute to how students develop mindfulness in the learning process and perseverance in facing academic demands.

In terms of mindfulness, variations between rural and urban students indicate that environment context influences children's attention patterns and learning experiences. Environmental characteristics, including social dynamics, rhythm of life, and exposure to stimuli, can shape how students focus their attention and consciously experience the learning process. Meanwhile, in terms of grit, bigger differences indicate that persistence and consistency of purpose appear to be more sensitive to regional context, including social expectations, learning habits, and access to educational resources (Colić et al., 2019)**.**

In the context of Islamic elementary schools, these findings suggest that although the values of perseverance and sincerity are taught uniformly, the implementation of education and learning experiences across regions can yield different outcomes in mindfulness and grit. Overall, these

results confirm that these two constructs not only reflect students' individual characteristics but are also closely related to the geographic and social contexts in which they grow and learn, as shown in Figure 3.

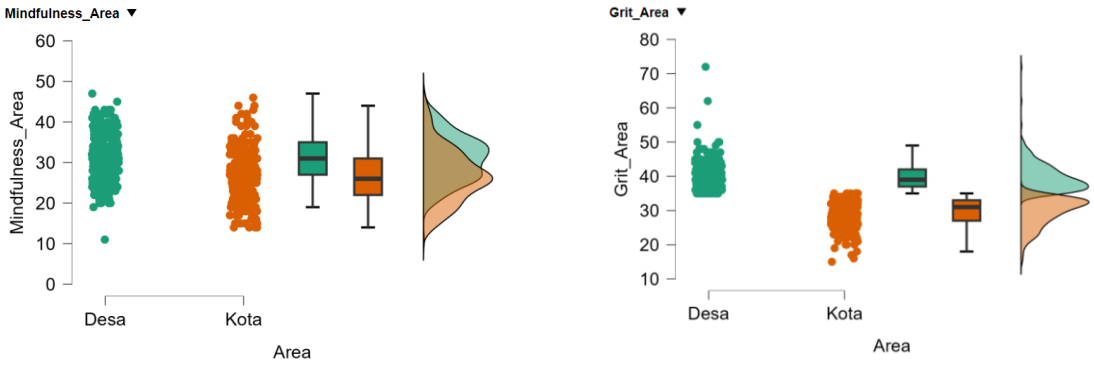


Figure 3. Distribution of Data on Differences in Mindfulness and Grit Levels Based on Region of Residence

Figure 3 shows the distribution of mindfulness and grit levels among Islamic elementary school students by residential area (rural or urban). In mindfulness, rural students tend to score slightly higher than urban students, as evidenced by the median and density distributions shifting toward higher scores. Conversely, the distribution of mindfulness among urban students appears more concentrated in the lower-middle range with a relatively wider spread. For grit, the differences are more pronounced: rural students show higher scores and a distribution more concentrated in the upper-middle range, while urban students tend to have lower scores and wider variation.

This pattern suggests that residential area is associated with variations in students' psychological experiences in learning contexts (França et al., 2022). Relatively stable, homogeneous rural environments may provide more consistent learning experiences, thereby supporting student engagement and persistence. Conversely, more dynamic and complex urban environments may present more distractions or diverse demands, which can impact students' learning experiences and consistency of effort (Colić et al., 2019). These differences are reflected in both the central values and the distribution patterns of scores across the two constructs.

Overall, this visualization confirms the inferential analysis's results, which showed significant differences across residential areas. These findings confirm that mindfulness and grit in Islamic elementary school students do not develop in a neutral context. However, they are instead influenced by the geographic and social conditions in which they grow and learn. Therefore, variations between rural and urban areas need to be considered in understanding the development of learning awareness and academic perseverance in elementary school-aged children.

3.4 Differences in Mindfulness and Grit Levels Reviewed by Province in Indonesia

Furthermore, the differences in levels of full awareness and persistence, analyzed by the respondents' provinces of origin in Indonesia, are shown in Table 4.

Table 4. Differences in Mindfulness and Grit Levels Reviewed by Province in Indonesia

ANOVA					
Mindfulness					
Cases	**Sum of Squares**	**df**	**Mean Square**	**F**	**p**
Provinsi	5619	23	244.29	7.283	< .001
Residuals	17141	511	33.54		
Grit					
Provinsi	22394.9	23	973.692	511.1	< .001
Residuals	973.5	511	1.905		

The One-Way ANOVA in Table 4 tests whether there are differences in levels of mindfulness and grit among students by province of origin. The test results show a p-value of <.001, indicating significant differences in mindfulness and grit levels among students by province of origin. ANOVA results showed significant differences in the levels of mindfulness and grit of Islamic elementary school students based on their province of origin. This finding confirms that geographic context is associated with variations in both constructs, so the development of learning awareness and perseverance cannot be understood solely as individual characteristics but also as phenomena influenced by the broader sociocultural environment.

Differences between provinces in mindfulness indicate that learning experiences, school interaction patterns, and social dynamics in each region can shape how students focus and experience the learning process. This variation is likely related to differences in the implementation of character education, learning structures, and the intensity of religious practices in Islamic elementary schools in various regions. Thus, student mindfulness does not develop in a uniform environment, but rather in interaction with diverse educational practices and local cultures (Barceló & Cooper, 2018).

Bigger differences in grit indicate that persistence and consistency of purpose appear to be more sensitive to regional context than mindfulness. Long-term academic experiences, social expectations, and access to educational resources in each province may contribute to students' levels of persistence. This regional variation confirms that grit is not a completely universal trait but rather develops through learning experiences influenced by the structural and social conditions in the environment in which students grow up (Adams & Khojasteh, 2018). Overall, these findings broaden the understanding of how cross-regional contextual factors influence mindfulness and grit among Islamic elementary school students. These findings emphasize the importance of accounting for geographic differences when designing educational policies and practices to strengthen learning awareness and academic persistence at the elementary school level, as shown in Figure 4 and Figure 5.

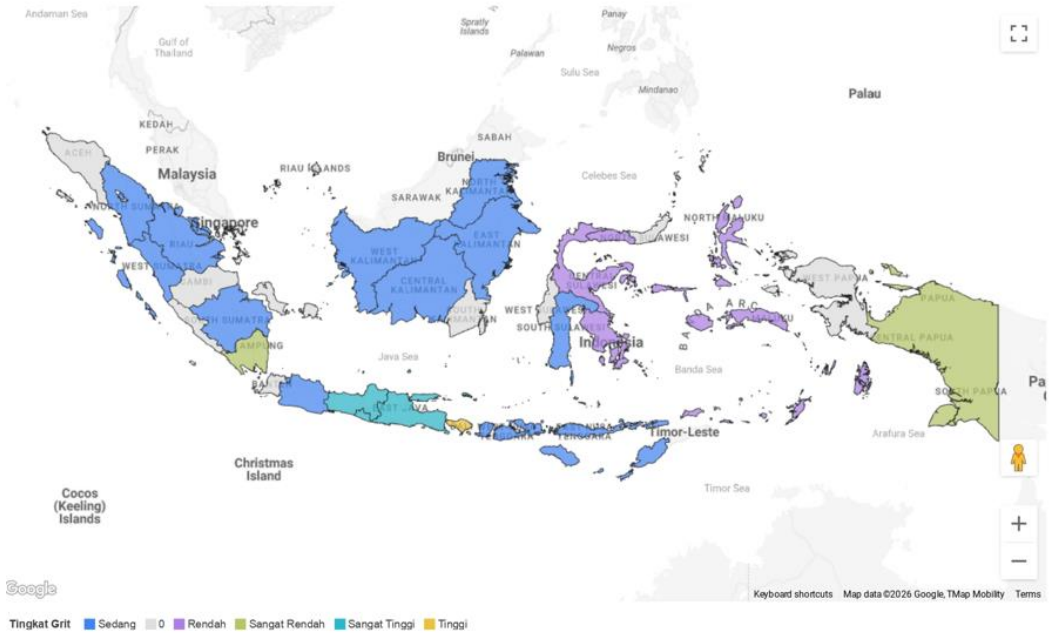


Figure 4. Distribution of Data on Differences in Grit Levels by Province in Indonesia

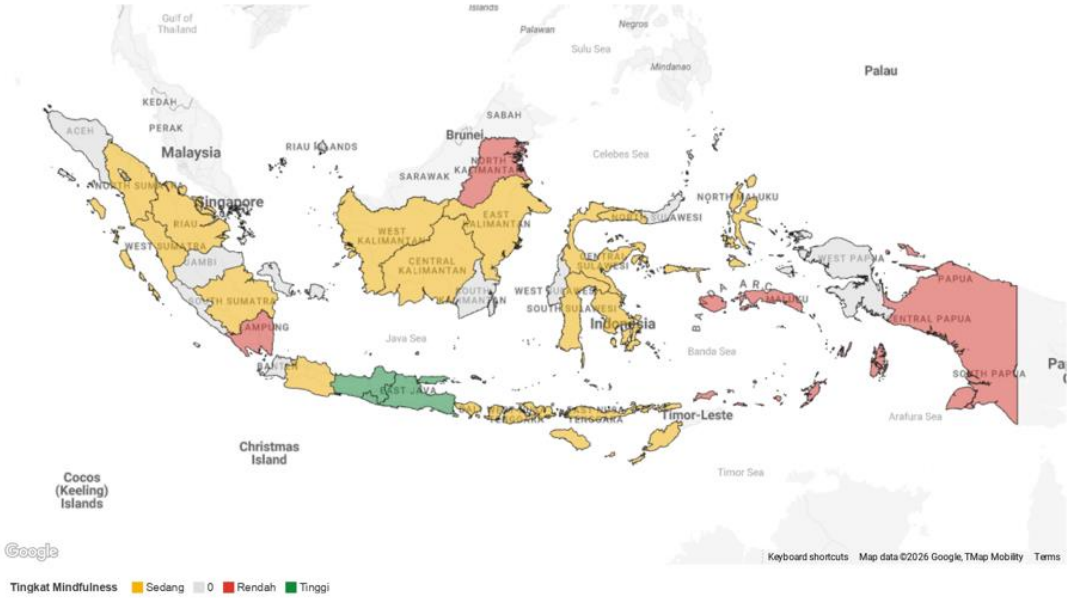


Figure 5. Distribution of Data on Differences in Mindfulness Levels by Province in Indonesia

The geographic mapping in Figures 4 and Figure 5 shows that several provinces, including East Java, Bali, West Nusa Tenggara, the Special Region of Yogyakarta, and parts of East Kalimantan, display relatively higher levels of mindfulness and grit than other provinces. Theoretically, this pattern can be understood through a developmental ecology approach, which emphasizes that children's psychological capacities develop in interaction with the education system, school culture, and local community dynamics (Bronfenbrenner & Morris, 2006; Huang et al., 2026). Regions with more stable and structured education systems tend to provide consistent learning experiences, which can strengthen conscious engagement in the academic

process and the habituation of repeated effort (Purnamasari, 2025). In the context of Islamic Elementary Schools, integrating religious values with systematic learning practices can create an environment that supports the internalization of learning awareness and perseverance in a more stable manner (Berkowitz & Bier, 2005; Liu et al., 2022).

In contrast, provinces such as Papua, Central Papua, South Papua, parts of Southeast Sulawesi, and Maluku show relatively lower levels of mindfulness and grit. Conceptually, these variations are better understood as reflections of differences in structural and social contexts rather than as indicators of inherent individual capacity. Differences in access to educational resources, stability of academic experiences, and social dynamics in each region can influence how students experience the learning process and develop consistency of effort (Bronfenbrenner & Morris, 2006; Huang et al., 2026; Purnamasari, 2025). Given the plastic and contextual nature of mindfulness and grit in elementary school, differences across provinces confirm that the development of these two constructs is highly sensitive to the quality and continuity of learning experiences available in local environments.

3.5 The Influence of Mindfulness on Grit in Elementary School Students

The analysis found a correlation between mindfulness and grit among Islamic elementary school students in Indonesia, as shown in Table 5.

Table 5. Coefficients of Mindfulness and Grit in Islamic Elementary School Students

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	34.742	0.286		121.48	< .001
M_1	(Intercept)	21.843	1.168		18.71	< .001
	Mindfulness	0.446	0.039	0.440	11.33	< .001

The results of a simple linear regression analysis indicate that mindfulness is a significant predictor of grit among Islamic elementary school students in Indonesia. These results confirm the relevance of the construct of mindfulness in explaining the development of discovery and persistence from an early age. The basic model (M0), which includes only constants, yielded a mean grit score of 34.742 (SE = 0.286; $p < .001$), reflecting students' general grit levels before accounting for predictive psychological factors. When the mindfulness variable was included in the model (M1), the analysis results showed a substantial improvement in model quality. Mindfulness was shown to have a positive and significant influence on grit, with an unstandardized regression coefficient of 0.446 (SE = 0.039; $p < .001$). The standardized coefficient ($\beta = 0.440$) indicates that mindfulness makes a significant contribution to explaining variation in students' grit. Theoretically, this contribution strengthens the view that an individual's ability to sustain attention, be aware of internal experiences, and regulate emotional responses is an important foundation for the emergence of persistent behavior and long-term goal orientation, as shown in Table 6.

Table 6. Model Summary

Model Summary - Grit				
Model	**R**	**R^2**	**Adjusted R^2**	**RMSE**
M_0	0.000	0.000	0.000	6.615
M_1	0.440	0.194	0.192	5.945

Table 6 shows that Model 1 produced an R2 value of 0.440 with a coefficient of determination (R2) of 0.194. This indicates that mindfulness explains approximately 19.4% of the variance in students' grit. This proportion is quite significant in the context of psychological and educational research, particularly in elementary school-aged students. The Adjusted R2 value of 0.192 indicates that the model is well-stable and does not exhibit estimate inflation due to the number of predictors. Furthermore, the decrease in the RMSE value from 6.615 in Model 0 to 5.945 in Model 1 indicates an increase in predictive accuracy after incorporating mindfulness into the model. The analysis shows that mindfulness plays a significant role in explaining variations in grit among Islamic elementary school students in Indonesia. This finding confirms that mindfulness of learning experiences is closely related to students' ability to persist and remain engaged in challenging learning processes from an early age (Deep et al., 2025; Liu et al., 2022). This relationship is crucial given that grit in elementary school children is still in its early developmental stages and has not yet been consistently internalized.

From a child development perspective, mindfulness helps students stay present in the learning experience, even when facing difficulties, boredom, or initial failure (Bordbar et al., 2024; Wu & Zhao, 2023). Students who are more aware of their internal experiences are less likely to avoid challenging tasks and, therefore, demonstrate greater persistence over time (Liu et al., 2022)**.** Thus, mindfulness can be understood as a psychological state that supports sustained learning efforts rather than a mere temporary state of mind. The significant contribution of mindfulness to grit suggests that perseverance in elementary school is not a fixed characteristic but rather relates to how students experience and interpret the daily learning process. In the context of Islamic elementary schools, these findings clarify that the normatively taught value of perseverance (*ṣabr*) will be more evident in learning behavior if students have adequate awareness of their learning experiences and emotions (Bordbar et al., 2024; Liu et al., 2022; Wu & Zhao, 2023). Overall, the results of this study broaden the understanding of grit as a developmental capacity that can be developed from an early age. By positioning mindfulness as a contributor to grit, this study emphasizes the importance of an Islamic educational approach that promotes moral values and supports conscious, meaningful learning experiences appropriate to the child's developmental stage.

Berdasarkan Tabel 5, ringkasan menunjukkan bahwa Model 1 menghasilkan nilai R sebesar 0,440 dengan koefisien determinasi (R^2) sebesar 0,194. Hal ini mengindikasikan bahwa mindfulness menjelaskan sekitar 19,4% varians grit siswa. Proporsi ini cukup signifikan dalam konteks penelitian spikologis dan Pendidikan, khususnya pada kelompok siswa usia sekolah dasar. Nilai Adjusted R^2 sebesar 0,192 menunjukkan bahwa model memiliki kestabilan yang baik dan tidak mengalami inflasi estimasi akibat jumlah predictor. Selain itu, penurusan nilai RMSE dari 6,615 pada model 0 menjadi 5,945 pada Model 1 menunjukkan peningkatan akurasi prediksi setelah memasukkan mindfulness ke dalam model.

3.6 Implications

The findings of this study extend the grit literature by positioning grit as a developmental capacity closely related to mindfulness in elementary school. Regression results indicate that mindfulness explains a significant proportion of the variance in grit, supporting the view that perseverance is not simply a stable dispositional trait but rather relates to how students experience and make sense of everyday learning (Christopher et al., 2022; Hosseini et al., 2024)**.** Thus, this study enriches the discourse in educational psychology by demonstrating that

strengthening the capacity for experiential mindfulness has direct relevance to the development of academic perseverance from an early age.

Furthermore, variations by gender, region of residence, and province strengthen the argument that mindfulness and grit are context-sensitive constructs. Cross-provincial and rural-urban findings suggest that both capacities develop in interaction with the educational system and sociocultural environment. This strengthens the contextual approach to understanding children's psychological development and challenges the assumption of grit's universality without considering geographic and social factors (Buenconsejo et al., 2025; Lam & Zhou, 2025). In practice, these findings suggest that efforts to strengthen grit in Islamic elementary school students should consider developing mindfulness as a foundation for the learning experience (Lee, 2025). Educational interventions that cultivate mindfulness in the learning process, for example, through structured reflection, strengthening attention to tasks, and experiential learning, have the potential to strengthen perseverance systematically. Differences by gender and region indicate that educational approaches cannot be uniform. Strategies for strengthening awareness and persistence need to be tailored to students' developmental characteristics and the social and geographic contexts in which they learn (OECD, 2021)**.** Therefore, character-based education policies at the primary school level should consider region-based differentiation.

3.7 Limitations

This study involved a cross-provincial sample and provides a broad national picture, but several limitations warrant consideration. First, the cross-sectional study design limits the ability to draw causal conclusions regarding the relationship between mindfulness and grit. The relationships found are associative and cannot be interpreted as definitively causal. Furthermore, mindfulness and grit were measured using self-report instruments, which are susceptible to perceptual bias, social desirability, and limited self-reflection in elementary school-aged children. Additional validation through multimethod approaches, such as behavioral observation or teacher reports, could enhance the accuracy of future measurements.

While data analysis in this study indicates significant differences across provinces, it did not directly measure specific contextual variables, such as school quality, pedagogical practices, or socioeconomic conditions. Therefore, interpretations of regional factors should be understood as indicative of geographic associations rather than as comprehensive structural explanations. Furthermore, because this study focused on Islamic elementary school students, generalizing the findings to non-religious schools or other educational systems requires caution. Comparative research across school types, including more detailed measurement of contextual variables, would provide a deeper understanding of the role of institutional and structural contexts in the development of mindfulness and grit in elementary school aged children.

Although the present findings are consistent with prior research demonstrating a positive association between mindfulness and grit, they simultaneously reveal an underlying conceptual gap within the existing literature. Mindfulness is often positioned as a key factor in fostering perseverance; however, the relatively moderate contribution observed in this study (R^2 = 19.4%) suggests that its role is not as dominant as commonly assumed. This indicates that grit may not rely solely on self-awareness and emotional regulation, but is likely influenced by additional factors that were not fully integrated into the present model, such as motivation, environmental support, and learning experiences. Moreover, the use of a cross-sectional design constrains the interpretation of directionality, leaving open the possibility that the relationship between mindfulness and grit is dynamic, reciprocal, or contingent upon specific contextual conditions.

4. CONCLUSION

This study examines the role of mindfulness in developing grit among Islamic elementary school students in Indonesia, considering variations across sociodemographic contexts. Findings indicate that students' levels of mindfulness and grit are generally moderate to low, indicating that both capacities are still developing. Significant differences across gender, region of residence, and province highlight that mindfulness and grit are not context-neutral, but rather shaped by sociocultural and educational environments. The results also confirm that mindfulness significantly predicts grit, suggesting that awareness and the organization of students' learning experiences play a crucial role in fostering grit. These findings position mindfulness as a relevant developmental factor in strengthening grit from an early age, particularly when supported by a context-sensitive educational approach. Scientifically, this study contributes by extending the mindfulness-grit framework to the context of elementary and Islamic education, offering a more contextualized understanding of grit as a dynamic and environmentally sensitive capacity, rather than a fixed individual trait. Practically, these findings emphasize the importance of integrating mindfulness into character education through reflective activities, mindfulness training, and supportive learning environments. In Islamic education, these practices can be aligned with values such as patience (*ṣabr*), self-control, and sincerity.

In addition, while significant variations were found across gender, residential context, and province, the absence of direct measurement of contextual variables (e.g., school quality, pedagogical practices, socioeconomic conditions) limits the depth of interpretation. These findings also challenge the dominant view of grit as a stable and universal trait, suggesting instead that it is context-sensitive and developmentally shaped. However, given that the sample was limited to Islamic primary schools, the generalizability of the findings remains constrained. Future research should adopt longitudinal and experimental designs, integrate multi-informant data, and explicitly incorporate contextual variables to develop a more comprehensive and ecologically grounded understanding of how mindfulness contributes to the development of grit.

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