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Research Article

EXAMINING THE RELATIONSHIP BETWEEN MINDFULNESS AND COGNITIVE FATIGUE AMONG UNIVERSITY STUDENTS IN JAKARTA EAST

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Abstract

This study aims to describe the levels of mindfulness and cognitive fatigue in students in Jakarta and to examine the relationship between these two variables. The method used in this study is quantitative correlational with Pearson's correlation analysis. This study involved 247 psychology students in Jakarta who were selected thru purposive sampling and completed a Google Form-based questionnaire. The instruments used include the Five Facet Mindfulness Questionnaire (FFMQ) to measure mindfulness and the Scale of Physical and Cognitive Fatigue Perceived (SPCFP) to measure cognitive fatigue. The research results indicate that students have a high level of cognitive fatigue (M = 3.31; SD = 1.20) and also a high level of mindfulness (M = 3.13; SD = 1.14). Additionally, a negative relationship was found between mindfulness and cognitive fatigue, with a correlation coefficient (r) of -0.627 and a significance value (p) of 0.001 ($p < 0.05$). This finding suggests that the more aware someone is of the thoughts that cross their mind, the less cognitive fatigue they experience.

Keywords: Mindfulness, Cognitive Fatigue, Student

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INTRODUCTION

University students, as learners at the level of higher education, play an important role in society as agents of change who are expected to contribute to the progress of the Indonesian nation (Hara dkk., 2025). Based on government regulations, students have rights and obligations that include academic freedom, access to teaching, facilities, and academic services to support the learning process, as well as compliance with regulations applied in higher education institutions (Park dkk., 2025). Jakarta, as the capital city and the center of political, economic, and educational activities, reflects an attractive learning environment for students (Cha, 2025). With a large student population, Jakarta has become one of the main centers of national education and attracts students from various regions.

Although Jakarta offers many opportunities, it is also known for typical metropolitan challenges such as traffic congestion, competitive pressure, and a fast-paced lifestyle (X. Zhao & Wang, 2025). High activity demands combined with environmental pressure make students in Jakarta vulnerable to difficulties in maintaining focus for extended periods (Bassi dkk., 2025). A preliminary survey conducted with 39 students indicated that most participants experienced difficulty sustaining concentration, felt mentally overloaded, and struggled to continue tasks that required prolonged attention (Inan dkk., 2025). This condition indicates the presence of cognitive fatigue, which refers to a state in which individuals find it difficult to maintain optimal performance when completing complex and long-lasting tasks.

Cognitive fatigue can affect a person's decision-making ability, particularly in determining how much effort they are willing to invest in completing tasks (Wang dkk., 2025). For example, a female student who divides her time between university studies and full-time employment in a private company often experiences cognitive fatigue, leading to anxiety and difficulty in completing academic tasks effectively (Tjandra dkk., 2025). In such conditions, individuals tend to avoid tasks that require high levels of energy and concentration, which can ultimately affect students' academic performance and mental well-being.

One relevant approach to addressing cognitive fatigue is mindfulness, which can help individuals manage pressure in a more adaptive manner (Z. Zhao dkk., 2025). Mindfulness, defined as full awareness of present experiences without judgment, has been shown to reduce levels of cognitive fatigue (Dianita dkk., 2025). Research indicates that higher levels of mindfulness are associated with lower levels of cognitive fatigue (Fukuie dkk., 2025). Mindfulness functions to strengthen attentional control and enhance cognitive flexibility, enabling individuals to restore mental resources depleted by high levels of pressure.

Although previous studies have examined the relationship between mindfulness and cognitive fatigue among students at public universities, similar research focusing on private university students, particularly in Jakarta, remains limited (Bouzouraa dkk., 2025). Several studies suggest differences in academic stress levels and cognitive fatigue triggers between students in public and private universities (Atre dkk., 2025). Therefore, this study aims to address this research gap by examining the relationship between mindfulness and cognitive fatigue among university students in Jakarta (Bondarenko dkk., 2025). It is expected that the findings of this study will provide new insights into the management of cognitive fatigue and serve as a basis for developing effective intervention strategies for students in higher education settings in Indonesia.

RESEARCH METHOD

The following sections describe the systematic approach used to investigate the relationship between mindfulness and cognitive fatigue among university students in Jakarta.

Research Design

This study used a quantitative correlational research design, aiming to examine the strength and direction of the relationship between the independent variable (mindfulness) and the dependent variable (cognitive fatigue) (Saaed dkk., 2025). The design was selected to provide an objective and statistically grounded understanding of how these two psychological constructs interact within a specific academic population (Shlaga, 2025). By utilizing a correlational approach, the researcher could determine the extent to which higher levels of mindfulness are associated with variations in cognitive fatigue, facilitating a clear analytical look at the predictive nature of these variables.

Research Target/Subject

The primary objective of this study is to analyze the correlation between mindfulness and cognitive fatigue among university students in Jakarta. Specifically, the research aims to identify whether mindfulness practices serve as a significant factor in mitigating the mental exhaustion associated with academic demands (Bordbar dkk., 2025). By targeting students within the Faculty of Psychology, the study also seeks to provide data-driven insights that can inform future mental health interventions and self-regulation strategies tailored for students in social science educational backgrounds.

The population of this study consisted of undergraduate students in Jakarta. Using a purposive sampling technique, the researcher selected a sample that exceeded the minimum statistical power requirements. Although G*Power software suggested a minimum of 40 participants, the study successfully involved 247 participants to achieve a statistical power of 0.95. The majority of the subjects were female (87%), aged between 20 and 21 years (63.6%), and were students at Tarumanagara University (55.1%). All participants were from the Faculty of Psychology, providing a homogenous educational background for the analysis.

Research Procedure

The research procedures were initiated by developing an online questionnaire, which was subsequently reviewed by an academic supervisor to ensure instrument validity (Latifi & Flegr, 2025). The study was then promoted via social media to reach the target subjects in Jakarta. Participants were required to complete four main sections: informed consent, demographic information, the cognitive fatigue scale, and the mindfulness scale (Shao dkk., 2025). Once the distribution period ended, the raw data were exported for cleaning and processing (Sepúlveda-Vildósola & Limón-Rojas, 2025). The entire process followed a systematic workflow from instrument validation and data acquisition to final statistical reporting.

Instruments, and Data Collection Techniques

Data were collected using a survey method with questionnaires distributed via Google Forms. The measurement instruments consisted of two primary scales: the cognitive fatigue scale and the mindfulness scale. Demographic data collection techniques were used to capture age, gender, socioeconomic status, and mobility patterns, such as the fact that 53% of participants rely on public transportation (Thomran dkk., 2025). These instruments were selected for their reliability in measuring subjective psychological states and their compatibility with digital administration, ensuring a high response rate and data consistency.

Data Analysis Technique

Data processing and analysis were conducted using Jamovi for statistical analysis and Microsoft Word for reporting. The primary analysis technique employed was Pearson's correlation, which was used to measure the strength and direction of the relationship between mindfulness and cognitive fatigue (Tian & Zhang, 2025). This inferential statistical method allowed the researcher to test the research hypothesis and determine the significance of the association (Ilieş dkk., 2025). Preliminary data cleaning was performed to ensure that only

valid and complete responses were included in the final correlation model, thereby maintaining the integrity of the research findings.

RESULTS AND DISCUSSION

The results of the descriptive analysis of the Scale of Physical and Cognitive Fatigue Perceived (SPCFP) scores indicate that the average level of cognitive fatigue among participants was categorized as high (M = 3.31; SD = 1.20). This score suggests that in recent days, most participants experienced decreased motivation, difficulties in understanding learning materials or assignments, and forgetfulness regarding what they intended to express. Many participants also reported difficulty maintaining concentration while studying, reflecting the direct impact of the cognitive burden they experienced. Indicators such as "sometimes forgetting what one wants to say" and "difficulty maintaining concentration" recorded higher scores, indicating that cognitive fatigue plays a substantial role in affecting memory and focus. These findings illustrate that high levels of cognitive fatigue negatively influence the quality of learning and daily academic activities of students. Overall, participants perceived greater difficulty in sustaining focus during tasks requiring concentration, which may subsequently affect their academic performance.

Based on the descriptive analysis using the Five Facet Mindfulness Questionnaire (FFMQ), the level of mindfulness among participants in this study was also relatively high (M = 3.13; SD = 1.14). This score indicates that most participants demonstrated a high level of awareness regarding the influence of emotions on their thoughts and behaviors. They tended to be able to describe their experiences verbally, showed good self-awareness, and were capable of managing emotions without reacting impulsively in stressful or demanding situations. However, certain dimensions, such as *acting with awareness* and *nonjudging of inner experience*, showed lower scores, suggesting that there is still room for improvement in awareness of daily actions and the ability to refrain from judging inner experiences. Overall, although mindfulness was measured at a relatively good level, these findings indicate that some aspects of self-awareness and emotional regulation among students still need to be strengthened to optimize the positive effects of mindfulness on well-being.

Prior to testing the main hypothesis, assumption tests were conducted to ensure that the data met the requirements for parametric analysis. The normality test using the One-Sample Kolmogorov–Smirnov Test showed that both mindfulness and cognitive fatigue data were normally distributed, with a p-value of 0.899 ($p > 0.05$). This result indicates that the data were suitable for further parametric analysis. The linearity test using the Test for Linearity revealed a linear relationship between mindfulness and cognitive fatigue, with a significance value of $p = 0.000$ ($p < 0.05$) and a deviation from linearity of 0.270, which exceeded 0.05. These results confirm that the relationship between the two variables could be appropriately analyzed using Pearson's correlation. Furthermore, the heteroskedasticity test using the Breusch–Pagan Test showed no indication of heteroskedasticity, with a p-value of 0.331 ($p > 0.05$), indicating homogeneous residual variance across observations. These assumption tests confirmed that Pearson's correlation analysis could be conducted without concern for violations of basic assumptions.

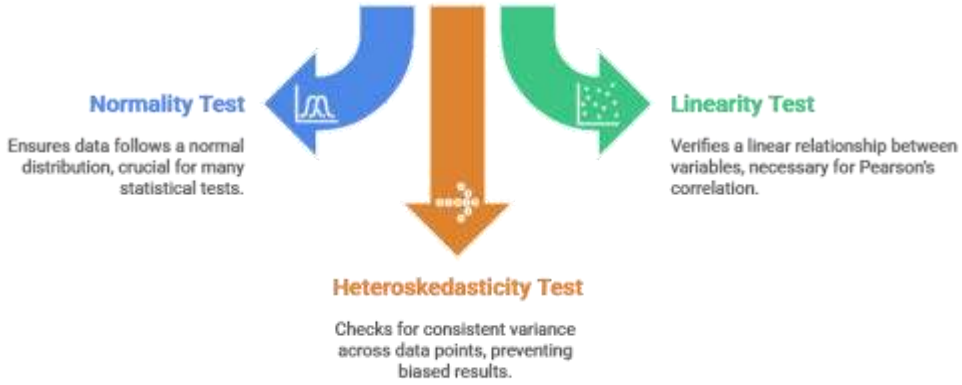

Figure 1. Do the Data Meet the Assumptions for Parametric Analysis?

The results of Pearson's correlation analysis revealed a significant negative relationship between mindfulness and cognitive fatigue ($r(245) = -0.627$, $p = 0.001$), indicating that higher levels of mindfulness among students were associated with lower levels of cognitive fatigue. This negative relationship suggests that participants who were more attentive to the influence of emotions on their thoughts and behaviors, better able to articulate their experiences verbally, and more capable of self-regulation in challenging situations tended to experience lower cognitive fatigue. Further analysis showed a coefficient of determination (r^2) of 0.3931, meaning that mindfulness accounted for 39.31% of the variance in cognitive fatigue levels. These findings reinforce the understanding that mindfulness plays an important role in reducing cognitive burden among students. However, more than 60% of the variance in cognitive fatigue was influenced by other factors not examined in this study, such as sleep behavior or academic stress, which should be considered in efforts to reduce cognitive fatigue among students.

The researcher also explored differences in cognitive fatigue levels between students from public and private universities. The results of the independent samples t-test showed a significant difference between the two groups ($t = -2.42$, $p = 0.016$), with students from private universities experiencing higher levels of cognitive fatigue than those from public universities. This finding highlights the importance of the academic environment in influencing cognitive fatigue, where higher academic demands and stress levels in private universities may increase the risk of cognitive fatigue. These results indicate that external factors, such as institutional context and academic pressure, should be considered when addressing cognitive fatigue among students.

This study also examined differences in mindfulness levels between students from public and private universities. The t-test results indicated a significant difference in mindfulness between the two groups ($t = 2.66$, $p = 0.008$), with students from public universities demonstrating higher levels of mindfulness than those from private universities. This finding suggests that students in public universities may be more accustomed to mindfulness practices or experience lower levels of academic pressure compared to their counterparts in private universities. Overall, this result underscores the importance of mindfulness-based interventions in reducing academic stress, particularly for students in private universities who may face greater challenges.

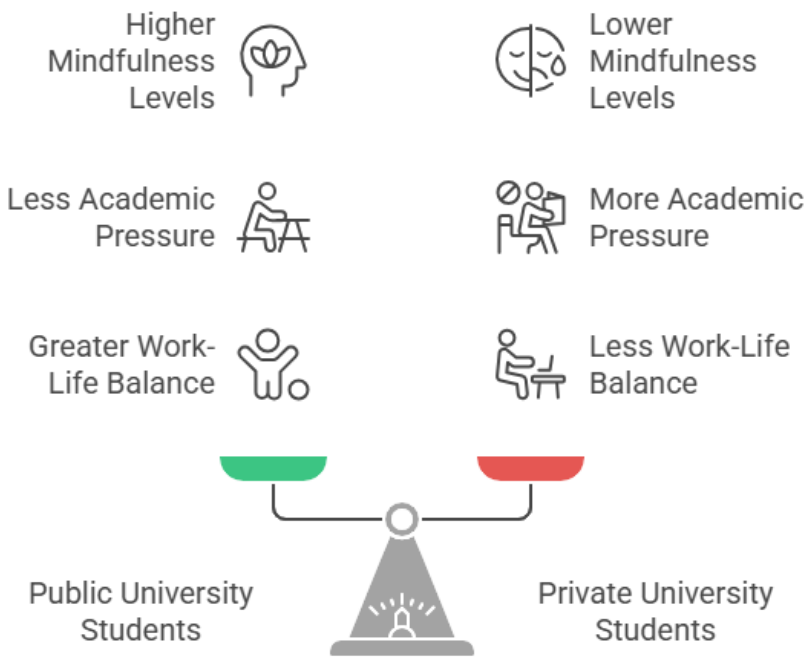

Figure 2. Comparing Mindfulness and Pressure in Universities

CONCLUSION

Based on the results of data analysis, the researcher concludes that students in Jakarta exhibit high levels of cognitive fatigue as well as high levels of mindfulness. The high level of cognitive fatigue is reflected in decreased motivation, a tendency toward forgetfulness, and difficulties in maintaining concentration. Meanwhile, the high level of mindfulness is indicated by the ability to recognize the influence of emotions, articulate personal experiences, and restrain impulsive reactions when facing challenging situations. Another key finding of this study is the presence of a negative relationship between mindfulness and cognitive fatigue, meaning that the higher an individual's awareness of the thoughts passing through their mind, the lower the level of cognitive fatigue they experience.

This study provides significant theoretical contributions by enriching the field of clinical psychology in Indonesia, particularly regarding the relationship between mindfulness and cognitive fatigue among university students in Jakarta. The findings may serve as a foundation for the development of more targeted mindfulness-based psychological interventions to help students manage cognitive fatigue more effectively. However, this study has several limitations, including the restricted scope of participants, which was limited to students in Jakarta. Therefore, future research is recommended to involve more diverse participants in terms of age, faculty, and socioeconomic background, as well as to employ experimental quantitative approaches or qualitative methods to gain deeper insights. The researcher also recommends exploring additional variables, such as sleep behavior, to obtain more comprehensive findings.

From a practical perspective, this study offers meaningful benefits for both students and educational institutions in Jakarta. Students are encouraged to enhance their mindfulness skills by becoming more aware of emotional influences, expressing their experiences, and restraining impulsive reactions. Practical strategies that can be applied include mindful breathing, writing in a mindfulness journal, and using meditation applications. Educational institutions also play an important role in creating environments that support mindfulness, such as providing mindfulness-based academic support programs, meditation sessions, or easily accessible

relaxation spaces. With institutional support, students are expected to be better equipped to manage cognitive fatigue amid high academic demands.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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