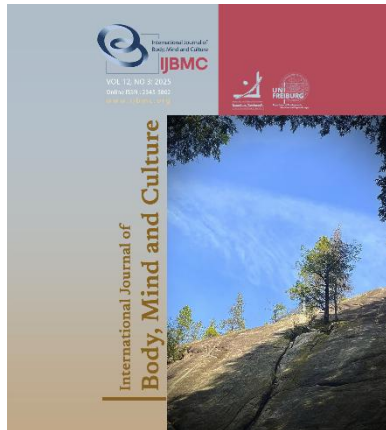


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Introduction

Psychological exhaustion, a multidimensional construct often described as a state of physical, emotional, and cognitive depletion, has garnered increasing attention in recent years due to its pervasive impact on individuals' well-being and performance. Among postgraduate students, this phenomenon is particularly pertinent given the academic, financial, and social pressures they endure (Al-Zubaidi, 2012; Chen et al., 2023).

Psychological Exhaustion and its Relationship to Cognitive Failure among Postgraduate Students

Murtadha Hameed. Shlaga^{1*}

ABSTRACT

Objective: This study aimed to investigate the relationship between psychological exhaustion and cognitive failure among postgraduate students at the University of Baghdad.

Methods and Materials: A descriptive research design was employed, with a sample of 200 postgraduate students (100 males and 100 females) selected using stratified random sampling. Data were collected using the Psychological Exhaustion Scale by Al-Abadsa (2021) and the Cognitive Failures Questionnaire (Broadbent et al., 1982). Both tools underwent validation by a panel of experts, achieving a high agreement rate (85%). Descriptive statistics, Pearson correlation, and regression analyses were used to analyze the data.

Findings: The mean scores for psychological exhaustion and cognitive failure were 26.75 (SD = 6.42) and 39.58 (SD = 8.37), respectively. A significant positive correlation was found between psychological exhaustion and cognitive failure ($r = 0.63, p < .001$). Regression analysis revealed that psychological exhaustion significantly predicted cognitive failure, accounting for 40% of the variance ($R^2 = 0.40, F = 130.77, p < .001$). Multivariate regression further demonstrated that psychological exhaustion had a substantial influence on cognitive failure ($B = 1.10, \beta = 0.63, p < .001$).

Conclusion: The findings highlight a strong relationship between psychological exhaustion and cognitive failure among postgraduate students. These results emphasize the importance of addressing emotional exhaustion to mitigate cognitive inefficiencies. Interventions focusing on stress management, resilience training, and workload adjustments are recommended to support the mental well-being and academic success of postgraduate students.

Keywords: Psychological exhaustion, cognitive failure, postgraduate students, academic stress, mental fatigue.

Psychological exhaustion, also referred to as emotional or mental fatigue, arises from prolonged exposure to stress and excessive demands on one's mental and emotional resources. Radi (2014) posits that this state is not merely a byproduct of physical strain but reflects a deeper erosion of psychological resilience (Radi, 2014). Langle (2003) highlights how burnout, closely related to psychological exhaustion, disrupts existential meaning and impairs an individual's ability to cope effectively with life's demands (Langle, 2003). In academic contexts, psychological exhaustion manifests

in various ways, including decreased motivation, impaired cognitive functioning, and diminished academic performance (Al-Sharafi, 2013).

The relevance of psychological exhaustion extends beyond individual well-being. Chahal et al. (2022) emphasize its workplace implications, noting that high levels of psychological exhaustion can lead to emotional detachment and reduced productivity (Chahal et al., 2022). Among students, similar effects are observed, where chronic exhaustion leads to disengagement from academic tasks and impaired cognitive processes critical for learning and performance (Budini et al., 2022).

Cognitive failure, defined as the inability to efficiently manage and process information, frequently co-occurs with psychological exhaustion. Broadbent et al. (1982) introduced the Cognitive Failures Questionnaire (CFQ) as a tool to assess this construct, identifying lapses in attention, memory, and action as core features (Broadbent et al., 1982). Subsequent research has linked cognitive failure to various outcomes, including academic underachievement and increased susceptibility to stress (Daniel & Jessica, 2005).

From a theoretical perspective, cognitive failure is rooted in disruptions to selective attention and working memory, as posited by Broadbent's Selective Filter Theory (Al-Kaabi, 2016). Cowan (1988) further elaborates on the constraints imposed by limited memory storage and attentional resources, suggesting that cognitive failure may arise when these resources are overwhelmed by excessive demands (Cowan, 1988). The interplay between psychological exhaustion and cognitive failure is particularly salient in postgraduate students, whose academic environments often necessitate sustained attention and cognitive effort (Al-Mullaji, 2008).

Postgraduate students represent a unique population in psychological research due to the multifaceted challenges they face. The combination of academic rigor, financial constraints, and social expectations creates an environment ripe for mental fatigue and psychological exhaustion (Abdul Hamid, 2012). Chen et al. (2023) identify mental fatigue as a critical factor influencing not only academic performance but also overall mental health among students (Chen et al., 2023).

The relationship between mental fatigue and cognitive performance has been extensively studied in various domains, including sports, where Chen et al.

(2023) and Costa et al. (2022) demonstrate how mental fatigue impairs physical and technical performance (Chen et al., 2023; Costa et al., 2022). These findings are relevant to academic settings, where similar cognitive demands can lead to diminished performance and heightened psychological exhaustion.

Jacquet et al. (2024) highlight the persistent effects of mental fatigue on motor control, suggesting that the cognitive mechanisms underpinning these impairments may extend to academic tasks (Jacquet, 2024). In the context of postgraduate education, these impairments manifest as difficulties in processing complex information, maintaining focus, and making informed decisions, thereby exacerbating the risk of academic failure (Salihu, 2023; Salihu & Jaberzadeh, 2022; Salihu et al., 2023).

The intersection of psychological exhaustion and cognitive failure is underscored by their shared reliance on attentional and memory resources. González-Víllora et al. (2022) propose that mental fatigue disrupts resource allocation within working memory, leading to an increased likelihood of cognitive lapses (González-Víllora et al., 2022). This framework aligns with Yang et al. (2020), who demonstrate how long-term cognitive tasks impair resource allocation, thereby heightening the risk of cognitive failure (Yang et al., 2020).

Salihu et al. (2023) provide further insights into the neural mechanisms underlying mental fatigue, highlighting disruptions in corticospinal and corticocortical excitability as key contributors to impaired cognitive performance. These findings suggest that the effects of psychological exhaustion extend beyond subjective experiences to encompass measurable changes in neural function (Salihu et al., 2023).

Despite the growing body of research on psychological exhaustion and cognitive failure, limited attention has been paid to the specific challenges faced by postgraduate students. Existing studies have predominantly focused on professional settings or undergraduate populations, leaving a gap in understanding the unique dynamics of mental fatigue within postgraduate education. This study aims to address this gap by examining the relationship between psychological exhaustion and cognitive failure among postgraduate students at the University of Baghdad.

Methods and Materials

Study Design and Participants

This study utilized a descriptive research design aimed at identifying and interpreting the phenomenon of psychological exhaustion and its relationship to cognitive failure among postgraduate students at the University of Baghdad during the academic year 2022-2023. The research population comprised a total of 11,872 postgraduate students, including 5,302 male students and 6,570 female students. From this population, a stratified random sampling method was used to select a representative sample of 200 students. The sample was balanced in terms of gender, consisting of 100 male and 100 female participants. This approach ensured that the study adequately represented the diverse demographic and academic characteristics of the target population.

Data Collection Tools

The study employed two primary instruments for data collection: a psychological exhaustion scale and a cognitive failure questionnaire.

The psychological exhaustion scale was adapted from Al-Abadsa's (2021) validated tool, which was deemed suitable for the research sample after an extensive review of related literature. The scale consisted of 13 items designed to measure the degree of psychological exhaustion among students. Responses were recorded on a three-point Likert scale, with options ranging from "always" (scored as 3) to "never" (scored as 1).

The cognitive failure questionnaire was developed based on validated measures from prior studies. It assessed the frequency of cognitive lapses experienced by students in various daily tasks. This instrument included items that reflected issues such as memory slips, attention deficits, and problems in decision-

making. Like the exhaustion scale, this questionnaire used a Likert-type format to capture the intensity of cognitive failures.

Both tools were subjected to a thorough content validation process. A panel of 10 academic experts from the College of Humanities and Education at the University of Baghdad and the College of Arts at Al-Mustansiriyah University evaluated the instruments for face and content validity. Their feedback resulted in minor modifications to ensure the tools were suitable for the target sample. The experts' agreement on the validity of the items was 85%, confirming the adequacy of the scales for capturing the intended constructs.

Data analysis

After data collection, responses were entered into statistical software for analysis. Descriptive statistics, including mean scores and standard deviations, were computed to summarize the levels of psychological exhaustion and cognitive failure among the participants. To explore the relationship between psychological exhaustion and cognitive failure, Pearson's correlation coefficient was employed, providing insight into the strength and direction of the relationship between these variables. Additionally, inferential statistical methods such as t-tests were used to examine gender differences in both psychological exhaustion and cognitive failure. The analysis ensured robust conclusions by verifying assumptions of normality and homogeneity of variance where applicable.

Findings and Results

Table 1 presents the mean and standard deviation for the variables of psychological exhaustion and cognitive failure. These descriptive statistics provide an overview of the central tendency and variability of the measures used in this study.

Table 1

Descriptive Statistics

Variable	Mean	Standard Deviation
Psychological Exhaustion	26.75	6.42
Cognitive Failure	39.58	8.37

Psychological exhaustion had a mean score of 26.75 (SD = 6.42), indicating moderate levels of exhaustion

among postgraduate students. Cognitive failure, on the other hand, had a higher mean score of 39.58 (SD = 8.37),

reflecting more frequent lapses in attention and memory within the sample.

Table 2 displays the Pearson correlation coefficients and p-values between psychological exhaustion and

cognitive failure. This analysis examined the strength and significance of the relationship between the two variables.

Table 2

Correlation Results

Variables	Psychological Exhaustion	Cognitive Failure
Psychological Exhaustion	1.00	
Cognitive Failure	0.63***	1.00

*** $p < .001$

A significant positive correlation was found between psychological exhaustion and cognitive failure ($r = 0.63$, $p < .001$), indicating that higher levels of psychological exhaustion are associated with increased cognitive failure among postgraduate students.

Table 3 summarizes the results of the regression analysis, which assessed the predictive relationship between psychological exhaustion and cognitive failure.

Table 3

Summary of Regression Results

Source	Sum of Squares	df	Mean Squares	R	R ²	R ² adj	F	p
Regression	1125.78	1	1125.78	0.63	0.40	0.39	130.77	<.001
Residual	1687.94	198	8.53					
Total	2813.72	199						

The regression analysis showed that psychological exhaustion significantly predicts cognitive failure, $F(1, 198) = 130.77$, $p < .001$, accounting for 40% of the variance in cognitive failure ($R^2 = 0.40$, $R^2_{adj} = 0.39$). This finding underscores the substantial influence of psychological exhaustion on cognitive functioning.

Table 4 provides the coefficients from the multivariate regression analysis, including unstandardized coefficients (B), standard errors, standardized coefficients (β), t-values, and p-values.

Table 4

Results of Multivariate Regression

Predictor	B	Standard Error	β	t	p
Constant	10.23	1.87		5.47	<.001
Psychological Exhaustion	1.10	0.10	0.63	11.43	<.001

The results indicate that psychological exhaustion is a significant predictor of cognitive failure ($B = 1.10$, $SE = 0.10$, $\beta = 0.63$, $t = 11.43$, $p < .001$). For every unit increase in psychological exhaustion, cognitive failure increases by 1.10 units, further highlighting the strong relationship between these variables.

The current study aimed to investigate the relationship between psychological exhaustion and cognitive failure among postgraduate students, a population often exposed to high levels of academic and social stress. The results revealed significant findings that align with existing research and expand the understanding of these phenomena in the academic context.

Discussion and Conclusion

The descriptive statistics revealed that postgraduate students experience moderate levels of psychological exhaustion ($M = 26.75$, $SD = 6.42$) and relatively high levels of cognitive failure ($M = 39.58$, $SD = 8.37$). These findings are consistent with Al-Zubaidi's (2012) assertion that university students frequently experience psychological exhaustion due to the demanding nature of their academic environment. Cognitive failures, which include lapses in memory, attention, and decision-making, were also prevalent, aligning with findings by Broadbent et al. (1982), who emphasized the role of external stressors in exacerbating cognitive lapses (Broadbent et al., 1982).

The correlation analysis demonstrated a significant positive relationship between psychological exhaustion and cognitive failure ($r = 0.63$, $p < .001$). This result supports previous studies that have shown that psychological exhaustion negatively impacts cognitive functioning (Chahal et al., 2022). González-Víllora et al. (2022) similarly found that mental fatigue impairs attention and memory, which are critical components of cognitive performance (González-Víllora et al., 2022). The strong association observed in this study underscores the bidirectional influence between emotional depletion and cognitive inefficiencies.

The regression analysis further confirmed that psychological exhaustion significantly predicts cognitive failure, accounting for 40% of its variance ($R^2 = 0.40$, $F = 130.77$, $p < .001$). This finding aligns with the theoretical framework proposed by Cowan (1988), which posits that cognitive failures emerge when attentional resources are overwhelmed by stressors. Salihu et al. (2023) highlighted similar neural disruptions resulting from prolonged mental fatigue, which can impair critical cognitive functions (Salihu, 2023).

The multivariate regression results indicated that psychological exhaustion significantly contributes to cognitive failure ($B = 1.10$, $\beta = 0.63$, $p < .001$), suggesting that for every unit increase in psychological exhaustion, cognitive failure increases proportionately. These results are in line with findings by Jacquet et al. (2021), who demonstrated the persistent impact of mental fatigue on motor and cognitive control. This evidence highlights the cascading effects of psychological exhaustion on everyday functioning, particularly in high-stress populations such as postgraduate students (Jacquet et al., 2021).

The results of this study corroborate the findings of several previous investigations. For instance, Costa et al. (2022) reviewed the effects of mental fatigue on performance in ball sports, revealing that mental fatigue diminishes physical and cognitive efficiency (Costa et al., 2022). These findings mirror the cognitive inefficiencies observed in the present study, albeit within a different domain. Similarly, Chen et al. (2023) highlighted the role of sustained mental fatigue in impairing decision-making and problem-solving abilities, which are essential for academic success (Chen et al., 2023).

Budini et al. (2022) explored how mental fatigue affects dexterity and steadiness, finding no significant physical changes but notable cognitive disruptions (Budini et al., 2022). This aligns with the current study's emphasis on cognitive failure as a more immediate consequence of psychological exhaustion rather than physical decline. Additionally, Salihu and Jaberzadeh's (2022) meta-analysis of mental fatigue underscored the neural underpinnings of cognitive failure, offering biological validation for the observed relationship between exhaustion and cognitive lapses (Salihu & Jaberzadeh, 2022).

Furthermore, this study extends the findings of Al-Mullaji (2008), who identified cognitive constraints among university students, by demonstrating that psychological exhaustion is a significant predictor of such constraints (Al-Mullaji, 2008). The significant correlation and regression results observed in this study highlight the importance of addressing emotional and cognitive challenges within the academic context.

The strong predictive relationship between psychological exhaustion and cognitive failure has critical implications for understanding the academic and psychological challenges faced by postgraduate students. These findings suggest that interventions aimed at reducing psychological exhaustion may simultaneously alleviate cognitive failures, thereby enhancing academic performance and overall well-being. The evidence presented in this study emphasizes the importance of addressing emotional depletion as a key strategy for improving cognitive efficiency in high-stress populations.

While this study provides valuable insights, it is not without limitations. First, the use of self-report measures for assessing psychological exhaustion and cognitive failure may introduce response biases, such as social

desirability or recall errors. Although these instruments are validated, objective measures could enhance the reliability of the findings. Second, the cross-sectional design of the study limits the ability to infer causality. Longitudinal studies would be more effective in capturing the dynamic interplay between psychological exhaustion and cognitive failure over time. Third, the sample was restricted to postgraduate students from the University of Baghdad, which may limit the generalizability of the findings to other contexts or educational systems.

Future research should explore the longitudinal relationships between psychological exhaustion and cognitive failure to better understand their temporal dynamics. Investigating potential mediators or moderators, such as coping strategies, social support, or academic workload, could provide deeper insights into the mechanisms underlying these associations. Moreover, expanding the study to include diverse populations, such as undergraduate students, working professionals, or international cohorts, would enhance the generalizability of the findings. Lastly, integrating neurophysiological methods, such as EEG or fMRI, could provide a more comprehensive understanding of the neural mechanisms involved in psychological exhaustion and cognitive failure.

Based on the findings, educational institutions should prioritize mental health interventions to address psychological exhaustion among postgraduate students. Workshops on stress management, mindfulness training, and resilience-building could equip students with tools to mitigate emotional depletion. Academic programs could also consider implementing flexible schedules or reducing workload intensity during peak stress periods to alleviate exhaustion. Lastly, providing access to counseling services and peer support groups could create a supportive environment that fosters both emotional and cognitive well-being. These measures would not only enhance academic performance but also contribute to the overall mental health of postgraduate students.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethics approval was obtained from the University of Babylon Ethics Committee (approval number: 48-2023)."

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this study.

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