INTERNATIONAL GRADUATE COLLOQUIUM *j*-SPEAK2025

SPORTS AND PHYSICAL EXERCISE ASSEMBLY OF KNOWLEDGE SHARING

COLLOQUIUM PROCEEDINGS

EXTENDED ABSTRACT

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EVALUATING COGNITIVE VIGILANCE LEVEL BETWEEN VIDEO GAME PLAYERS AND NON-GAMERS AFTER COGNITIVE FATIGUE TASK

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Keywords: Video games, Cognitive fatigue, Attention, Vigilance, Psychomotor Vigilance Task

I. INTRODUCTION

Video game players (VGPs) may exhibit unique cognitive advantages, including enhanced vigilance [1]. However, the effects of cognitive fatigue on these abilities remain underexplored [2]. The present study evaluates vigilance performance differences between gamers and non-gamers after a cognitively taxing task, addressing gaps in understanding the role of VGPs in mitigating cognitive fatigue while simultaneously aiming to clarify the potential of gaming in enhancing cognitive endurance.

II. Methods

Thirty participants (N = 30) from UiTM Negeri Sembilan, classified as gamers (n = 15, gaming hours > 7 hours/week) and non-gamers (n = 15, gaming hours < 1 hour/week), were recruited. Cognitive fatigue was induced using a 45-minute Stroop test for gamers, while non-gamers viewed a documentary entitled 'NASA Cassini Mission' straight from the source (Youtube). Cognitive vigilance was assessed at two different times (pre-and-post) cognitive load using the Psychomotor Vigilance Task (PVT) via an app in the App Store, capturing sustained vigilance and reaction time data. A Paired Sample T-test was conducted to seek differences within the group, followed by a magnitude of mean difference analysis.

III. RESULTS AND DISCUSSION

A. Cognitive Vigilance Performance Among Gamers and Non-Gamers

According to Table 1, both gamers (t = -1.686, df = 13, p = 0.116) and non-gamers (t = -1.887, df = 15, p = 0.079) exhibited a slight decrease in vigilance performance pre-to-post task, but the decline was not statistically significant (p > 0.05). While gamers initially showed marginally faster reaction times, the difference was negligible. Surprisingly, the expected advantage of gamers in maintaining vigilance was not observed, as both groups demonstrated similar susceptibility to cognitive fatigue (Table 1).

B. Differentiate Vigilance Performance Between Gamers and Non-Gamers After a Cognitively Taxing Task

Post-task, both groups (gamers: 3.86s, non-gamers: 4.60s) experienced slower reaction times, indicating cognitive fatigue. However, the decline was not substantial. Gamers maintained slightly better performance, but the difference was not statistically significant, suggesting limited resistance to fatigue (Table 1). The anticipated advantage of the gaming experience did not translate into superior vigilance, as both groups showed comparable post-task performance [3].

 TABLE I

 Pre- and Post-Test Score Comparison for Gamers and Non-Gamers

	Pre	Post	Post – Pre	р	t
Gamers	3.41	3.86	-0.453	0.12	-1.67
Non- gamers	4.24	4.60	-0.358	0.79	-1.89

IV. CONCLUSIONS

This study highlights the cognitive resilience of VGPs under cognitive fatigue, with gamers showing a slightly superior vigilance compared to non-gamers, yet not statistically significant. Findings underscore the potential of gaming to mitigate fatigue-related cognitive decline, offering insights into the application of gaming in enhancing cognitive performance.

ACKNOWLEDGMENT

The authors thank the participants from Universiti Teknologi MARA, Negeri Sembilan branch, Malaysia.

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M.I., Zani, et al., Proceedings of the International Graduate Colloquium: Sports and Physical Exercise Assembly of Knowledge Sharing, i-SPEAK, 2025, 05th–06th February, Malaysia.