Noise-Induced Cognitive Interference: Implications for Academic Examination Performance

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Abstract

This study investigates the impact of environmental noise on academic performance, specifically focusing on quiz scores among college students. As environmental noise in educational settings has become a growing concern, understanding its effects on cognitive performance is critical for enhancing student learning outcomes. Utilizing a quasi-experimental design, this research divided students into three groups based on noise exposure levels: Low (<55 dB), Moderate (55–75 dB), and High (>75 dB). Data were analyzed through an Ordinary Least Squares (OLS) regression model and one-way ANOVA, revealing a statistically significant effect of noise levels on quiz performance ($F = 123.976$, $p < 0.001$). The regression model indicated a negative association between noise exposure and quiz marks, suggesting that higher noise levels contribute to reduced academic performance. Additionally, a t-test comparing Low and High noise groups further validated the detrimental impact of high noise on cognitive tasks. The findings highlight the importance of minimizing environmental noise in academic settings to support optimal learning conditions. Recommendations for creating quieter study environments and policies to address noise control in educational institutions are discussed.

Index Terms

Environmental noise, Academic performance, Cognitive performance, Noise exposure levels, Quiz scores.