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Title:

Effect of Traffic Noise Loudness on Cognitive Performance

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Abstract:

The influence of traffic noise on long-term health damage has already been studied in several studies. Traffic noise is thus capable of causing extra-aural noise effects in the human body. However, in addition to the influence of disturbing noise on health, losses in cognitive performance are another kind of potential extra-aural noise effects. To investigate this type of noise effect, the study presented here examines the influence of traffic noise loudness on cognitive performance using the N-Back Test. The design of the experiment was adapted in such a way that participants' short-term physiological responses to the stimuli were recorded at the same time. Here, a design was created that fulfills the requirements of physiological measurements and cognitive testing to enable a combined measure and analysis.

An evaluation of the error rate and reaction time shows the influence of loudness on deficits in cognitive performance. Additionally, these quantitative parameters allow a comparison to the participants' physiological responses to the individual stimuli and to what extent both extra-aural noise effects are related.

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