

# The effects of sounds on restorative processes

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## Introduction

Research on restorative environments has so far paid little attention to how environmental sounds might affect restorative processes (Alvarsson et al., 2010). Focus has primarily been on the effects of the visual qualities of the environment (e.g. Hartig et al. 1996). The aim of the present two experimental studies was to investigate cognitive, emotional, and physiological effects of different office sound conditions during work and rest periods. More precisely, we addressed the questions on how noise in open-plan offices affects cognitive performance and acute stress, and whether it is possible to promote cognitive restoration with exposure to pleasant sounds and film-clips of pleasant nature environments after having been exposed to aversive sounds.

## Method

In both “Experiment A” (n = 47) and “Experiment B” (n = 38) the participants went through one practice session and two experimental sessions in a simulated open-plan office. In each experimental session they worked for two hours on attentionally demanding tasks during noise exposure, and then had a period for rest at their desk (Experiment A - 7min; Experiment B - 14 minutes). Sound during the rest periods varied in terms of river movie with sound, only river sound, quiet and office noise for Experiment A; and in terms of nature movie without sound and office noise for Experiment B. In each session subjects performed two cognitive tasks and rated their tiredness and motivation at arrival, after the two hours of work and after the rest period. They also gave saliva and urine samples at different time points during the session.

## Results/Discussion

The results from Experiment A showed that the participants who saw a nature movie

(including river sounds) rated themselves as having more energy after the restoration period in comparison with both the participants who listened to noise and river sounds. Remaining in office noise during the restoration phase also affected motivation more negatively, than listening to river sounds or watching the nature movie. However, the measured stress hormones were not affected by sound condition.

The results from Experiment B showed that a quiet break was the most beneficial for the hearing impaired participants’ performance after noise exposure, while a break with other stimuli (nature movie) was most beneficial for the performance of the normal hearing persons. The normal hearing individuals also showed declined performance after a break with office noise. However, the quiet condition was the only condition which reduced self-rated fatigue for both hearing groups.

The present results underscore the need to address the issue on how to enhance the restorative qualities in the noisy environments of our daily surroundings.

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## References

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