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# The effect of natural environments and biodiversity on attention restoration

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Exposure to natural environments has been shown to lead to perceived attention restoration and recovery from attention fatigue. Consistent with attention restoration theory, strong evidence shows that natural environments are more restorative than urban environments. Less is known about the restorative effects of semi-natural environments such urban parks. There is emerging evidence that the level of biodiversity in the environment may contribute to perceived restoration, but the effect of biodiversity on attention fatigue is poorly understood. A 3×2 within-subjects experimental design aimed to test the following hypotheses: (1) Exposure to natural environments would be more restorative than exposure to semi-natural environments and (2) Exposure to higher biodiversity would be more restorative than exposure to low biodiversity or a control. 39 participants aged 18 to 35 were individually exposed to six video-recorded walks in two environments (forest and park) with varying diversity of birdsong (high, low, and none) and completed a sustained attention response task and a self-report measure of perceived restoration after each video. Results showed that the presence of birdsong led to increased perceived restoration, but poorer performance on the sustained attention task. No difference was found between natural and semi-natural environments, or between high and low biodiversity conditions. Our findings suggest that the auditory detection of biodiversity may enhance the mental health benefits of natural environments through perceived restoration. Our results also suggest that perceived restoration may not always correlate with actual restoration from attention fatigue. Finally, the lack of distinction between natural and semi-natural environments in our study may have practical implications for both mental health practitioners and urban planners.