

Attention restoration and stress reduction: Two mechanisms underlying the health benefits of exposure to green spaces

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Green spaces provide an array of ecosystem services (e.g., reductions in the urban heat island effect, habitat for a range of species, flood reduction). Among the least appreciated of these are what have been called *psychological ecosystem services* (Barman, Hamilton, & Daily, 2012). Psychological ecosystem services include a range of human cognitive and psycho-physiological outcomes that stem from two different mechanisms: the restoration of our ability to pay attention, and a more rapid reduction in the psychological and physiological signs of stress. In this paper, I describe both mechanisms and summarize empirical evidence in support of each.

ATTENTION RESTORATION THEORY

Our capacity to pay attention, that is to focus our mind on some particular topic, requires that we exclude from our thoughts stimuli from the nearby environment (e.g., sounds, smells, visual cues), and ideas that we might contemplate (e.g., “don’t forget to buy milk on the way home”). Attention Restoration Theory (ART) (Kaplan, 1995) posits that the mechanism that inhibits these other stimuli from being part of our conscious thought process fatigues with use. That is, over a relatively short period of time, it becomes increasingly difficult to suppress and ignore these other stimuli and keep our train of thought directed to one particular thing such as the papers we are grading, the proposal we are writing, or the vacation we are planning.

ART also posits that being in or viewing green spaces provides this inhibitory mechanism an opportunity to rest, or restore, and in doing so, allows us to focus our attention again. Many dozens of studies have produced empirical evidence in support of ART. The evidence demonstrates that exposure to green settings consistently boosts a person’s capacity to pay attention. The findings come from very green settings such as large and small forests, rural areas, wilderness settings, and prairies. But also from more modestly green settings such as community parks, schools, and neighborhoods.

STRESS REDUCTION THEORY

Our capacity to recover from a stressful event is enhanced by exposure to green spaces. That is, some types of green spaces have calming effects on people who have experienced stress. Stress Reduction Theory (SRT) (Ulrich, 1983) posits that landscapes containing vegetation, water, modest depth and complexity would have been, for hundreds of thousands of generations, beneficial to human survival because such settings provided resources and the capacity to anticipate the arrival of predators. Such landscapes help moderate and reduce states of arousal and negative thoughts and thus reduce the psychological and physiological symptoms of stress.

A variety of studies have demonstrated that managed green landscapes (e.g., urban parks, community streets planted with mature trees) are associated with reduced blood pressure, lower levels of the stress hormone Cortisol, a decrease in self-reported stress, and increases in positive mood. I conclude by considering these findings in light of our understanding of the ecosystem services provided by managed green spaces