

'Virtual nature' experiences in prisons reduce stress

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Before you read any more, find a picture of a natural setting or play a sound of a natural habitat. Here's a [YouTube video](#) with both, if you need it. A few minutes should be enough.

You've just had a "virtual nature experience." How do you feel? If you felt [less stress](#), you're not alone. The experience might even feel like it transports you to a different place.

For people who are in jails or prisons, experiencing nature virtually is usually their only option. A new study from University of Utah researchers finds that exposure to nature imagery or nature sounds decreased physiological signs of stress in the incarcerated, and spurred their interest in learning more about the habitats they experienced. The researchers also found that in general, people didn't strongly prefer visual to auditory nature experiences.

The findings from the study, published in *Ecopsychology*, could be put to use to benefit the physical and mental health of the incarcerated, says Nalini Nadkarni of the School of Biological Sciences.

"Findings from this study also help us understand how providing nature or nature imagery might be beneficial for other nature-deprived populations," she says.

Virtual nature

For nearly 20 years, Nadkarni has been bringing science and nature into prisons, to people who have little to no contact with what she and her colleagues call the "the non-built green and blue parts of our world." In multiple facilities at multiple levels of the correctional system, she's found people that are curious and eager to learn all they can about the natural world.

One of her efforts, at the Snake River Correctional Facility, is called the "Blue Room," a room in a maximum security facility where people in solitary confinement are able to watch videos showing natural environments. Previous work showed that the people who watched the

videos reported more positive moods and committed fewer violent infractions. The Blue Room was even named one of 2014's top 25 innovations by Time magazine.

For the new study, Nadkarni and her colleagues including Sara Yeo, associate professor in the College of Humanities and James Ruff, associate instructor in the School of Biological Sciences, met with 71 men in medium or minimum security blocks in the Salt Lake County Jail. After a survey about their opinions on science and nature, the participants viewed and listened to three-minute segments of video and audio of four different nature habitats: Forests, mountains, oceans and streams. The researchers call these sessions "virtual nature experiences."

The researchers monitored the participants' stress level throughout with two measures: Salivary cortisol, which responds to changes in stress within minutes, and galvanic skin response, which measures unconscious changes in skin electrical properties related to emotional states.

The participants reported feeling less stressed after the virtual nature experiences, and the physiological measurements backed that up. Nature exposure measurably decreased their stress.

Audio/visual

The researchers had expected that the sights of nature would produce a stronger stress-reducing effect than the sounds, but found that that wasn't always the case. "We learned that both visual and auditory stimuli evoked positive responses," Nadkarni says, "but that these responses were mixed—some of the respondents articulated a stronger preference and exhibited stronger physiological responses to auditory versus visual responses."

The researchers also noted that videos produced a more variable

response overall than audio, meaning that different video habitats produced different stress-relieving responses, whereas responses to different audio habitats were largely constant. When asked to rate the different segments, the participants rated highest the videos of streams and lakes, videos of ocean and beaches and sounds of streams, followed by videos of mountains.

Eager to learn

At the end of the experiment, the researchers asked participants how interested they might be in taking a biology or ecology course to learn more about the habitats they'd seen and heard. Overall, they were more interested in learning about nature after the experience. Yeo, who studies science communication, says this result is encouraging, as people who are incarcerated not only have limited access to nature but may have had limited exposure to science before their incarceration.

"And so it's really hopeful to think that one can see these changes even among groups that are not necessarily selecting science, or that we maybe don't think of as having an affinity for science," she says. "It's still important for us to try to share experiences with science, even in places where we normally wouldn't."

Ruff adds that helping people in prisons reduce their stress may help them later successfully re-enter society.

"Decreasing their stress while incarcerated," he says, "through low cost-methods like exposure to nature imagery, could allow them to better focus on their educational, mental health and job training needs leading to better outcomes. What this study does is begin to fine-tune what aspects of nature imagery optimally reduces stress."

Nadkarni hopes the results can be applied to people in other institutional

or nature-deprived environments, such as residential treatment center, senior assisted living centers, or even windowless cubicles for office workers.

"Our work leads to future studies of the effects of virtual nature in such habitats," she says.

More information: Nalini M. Nadkarni et al, Providing Virtual Nature Experiences to Incarcerated Men Reduces Stress and Increases Interest in the Environment, *Ecopsychology* (2021). [DOI: 10.1089/eco.2020.0043](https://doi.org/10.1089/eco.2020.0043)

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