



EFFECTS OF A SIMULATED NATURE VIEW ON COGNITIVE AND PSYCHO-PHYSIOLOGICAL RESPONSES OF CORRECTIONAL OFFICERS IN A JAIL INTAKE AREA

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DESIGN ISSUE

In an attempt to understand one aspect of the impact of correctional facility environments on inmates and staff, this research studied the influence of views of nature, designed into the booking area of the Sonoma County Jail, on the stress and mental functioning of the jail staff.

The hypothesis of the study was stated as “views of nature, introduced into a jail booking area, would be expected to result in a measurable reduction in levels of stress experienced by inmates and staff, compared to the situation prior to the intervention.”

BACKGROUND

This study grew out of an interest in the potentials of applying neuroscience theories and methods to understand and improve jail environments. Initially, a “search conference” was held with invited neuroscientists, justice architects, and correctional administrators. A wide variety of possible effects were discussed, ranging from visual, auditory, and transactional to density and crowding. Impacts of views of nature was a topic that both interested all participants and appeared to be practical to carry out.

The booking or intake area of a jail can be a place of very considerable stress. Arrestees may be unstable either because of drugs and/ or alcohol; and a first-time jail experience can be very stressful. Because their behavior cannot be anticipated at this point, stress levels for staff may also be elevated.

Making changes to the physical environment was an option considered by the authors and alternatives were considered for the type of feature that could be incorporated into the design to reduce stress. The decision to opt for a view of nature - rather than manipulating the color, lighting, materials, or noise levels - was based on previous studies most of which were conducted in healthcare settings. These are briefly reviewed below.

One study surmises that contact with nature can be calming and soothing. Views of nature, as such, reduce boredom and stress. A study conducted in hospitals found that patients who were in rooms with a nature view recovered faster than those who did not have such views. Other studies have found that patients undergoing medical procedures felt less pain when views of nature were displayed in combination with sounds of nature.



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Yet another study found that nature scenes did not require focus or concentration and as a result were soothing. A fourth study found that visual interaction with nature can decrease aggressive behavior. A fifth found that gardens reduce aggressive behavior in Alzheimer patients and in prison inmates while others showed that they reduce emotional distress in hospitalized children. Views of nature have also been shown to reduce blood pressure levels in prison inmates.

Finally, studies have shown that displaying nature-based art on office walls resulted in less anger among subjects than abstract art or no art at all. And multiple studies have shown that art and photographs displaying nature scenes help in the reduction of stress and blood pressure, in pain management, lowering of heart rate, etc.

Thus, this study opted to incorporate nature in the form of a large scale photo mural of a natural scene in the Sonoma County Jail intake area and to measure its impact on reducing stress experienced by jail staff.

RESEARCH METHOD

A pre-post, quasi-experimental, within-subjects model was adopted for the study. A large-scale photo mural was installed in the inmate booking area of the Sonoma County Main Adult Detention Facility (MADF) in Santa Rosa, California. Objective and subjective data on stress were collected before and after introduction of the mural. The research subjects were correctional officers who staff the intake area during its busiest shifts. Pre- and post- data were collected on a total of twelve staff members. The twelve officers participating in the study were all the staff on all 3 shifts (100% of that staff).

Data were obtained through surveys and the performance of cognitive tasks. In addition, psychophysiological data were obtained by measuring variability in heart rate during the entire duration of each shift. This was measured by a sophisticated heart rate monitor consisting of a transmitter strapped to the chest and a receiver worn on the wrist. The data were downloaded to a computer and analyzed in a neuropsychology laboratory.

Following collection of the pre-intervention data, the mural was installed. It was a landscape which resembled an African savannah, with grasslands, hills in the background, and water in the middle ground. Post-installation data was collected after the mural had been in place for six weeks.

FINDINGS

Heart rate variability was assessed by measuring the inter-beat interval (interval between heart beats). This is achieved by examining consecutive "Rs" in the ECG and "log HF" or the natural log of the high frequency power of the heartbeat. Higher R rate and HF power indicate slower heart



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rate and less stress. Comparing these measures between the two data collection periods, it was found that stress levels were reduced following installation of the mural. On analyzing these measures for the start and end of the shift, it was found (during the post-mural period) that heart rate is significantly lower when the shift begins, and also increases at a lower rate with the progress of the shift.

In addition, the staff performed better at cognitive tasks after the mural installation indicating less fatigue and better attentiveness. They also demonstrated a higher level of tolerance. Despite the small size of the sample, the findings reviewed here were statistically significant.

IMPLICATIONS FOR DESIGN PRACTICE

For design teams embarking on a new or renovation jail project, consider the following:

- When designing a new jail intake, provide views to nature that can be seen by the officers.
- In existing facilities where windows to a landscape view cannot be added, provide views to nature via large scale photo murals.
- This study provides evidence that an environmental design intervention can reduce stress in a correctional setting. Since staff spend a considerable amount of time working in these settings, the benefits of reducing their stress levels can be quite important.
- Designers and stakeholders may consider use of large-scale, nature-based artwork as an instrumental feature in correctional design as part of a program to reduce stress.

LIMITATIONS

The authors identified several limitations:

- 1) This was a limited intervention in a single setting. Results could vary in different settings, with varying environmental conditions, and populations of inmates and staff.
- 2) The sample size was small. It would be interesting to have a larger sample that would allow, for example, testing for variability among staff on such features as age, gender, or length of experience working in a jail.
- 3) The study was not able to include the inmates and measure their stress-related responses to the mural. This was partially due to security concerns, but also inherent in the pre/post research design (since inmates cannot be returned to the jail after the mural is installed). While it may be inferred that inmate stress was also reduced, the study does not demonstrate it.



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