



# Urban greenery shown to reduce stress levels

By E&T editorial staff

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## Vertical greenery ‘planted’ on the exterior of buildings may help to buffer people against stress, according to a new VR study.

Researchers from Nanyang Technological University in Singapore used Virtual Reality (VR) to examine whether vertical greenery has a stress-buffering effect in urban environments. Using VR headsets, 111 participants were asked to walk down a virtual street for five minutes.

Participants were randomly assigned to either a street that featured rows of planted greenery or one with only buildings that had green painted walls in place of green plants.

To match a real-world experience, heavy traffic noise was played as the participants walked through the virtual street. Heart rate variability, which is a physiological indicator of stress, was continuously monitored using a portable electrocardiogram (ECG) device.

The study found that those who viewed buildings which only had green paint experienced a significant increase in stress as recorded by one measure of heart rate variability, while those who viewed the buildings with the green plants did not experience any change in stress.

Following the experiment, the participants answered a questionnaire that assessed their positive and negative emotions and the level of anxiety they were feeling. They reported feeling less positive when walking through the street with buildings covered by only green walls, while those walking through the street with buildings covered by plants did not report feeling either more or less positive.

The researchers said that walls of greenery have other benefits too such as helping to lower the ambient temperature, which reduces energy consumption from cooling systems.

They can also reduce carbon emissions and lessen the effect of the ‘urban heat island’ – a phenomenon where city centres experience much warmer temperatures than less populated areas because of limited greenery and a high concentration of built structures.

Associate Professor Lin Qiu, principal investigator of the study, said: “With urbanisation, more people are expected to be living in urban areas globally in future. It is thus important for urban city planners and architects to understand factors that can contribute to healthy living, as urban planning can have a direct impact on quality of life for the population.

“Our work can guide efforts to green cities, by providing evidence of how vertical greenery can be a viable way to integrate nature into our built environment and promote mental health.”

Co-lead author Sarah Chan said: “Our findings have important practical implications for city planning and design, especially for high density urban areas that face land constraints. It provides evidence that vertical greenery systems, which make use of vertical structures above-ground, may help moderate the detrimental consequences of stress.

“While previous studies looked at effects of green vegetation, the fact that the colour green could simply be a primitive visual feature, resulting in positive effects, was not considered. Thanks to emerging technology like VR, we overcame this limitation and were able to use a control condition, matching vertical greenery with the colour green in our study.”

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