How do horticultural activities affect brain activation and emotion?

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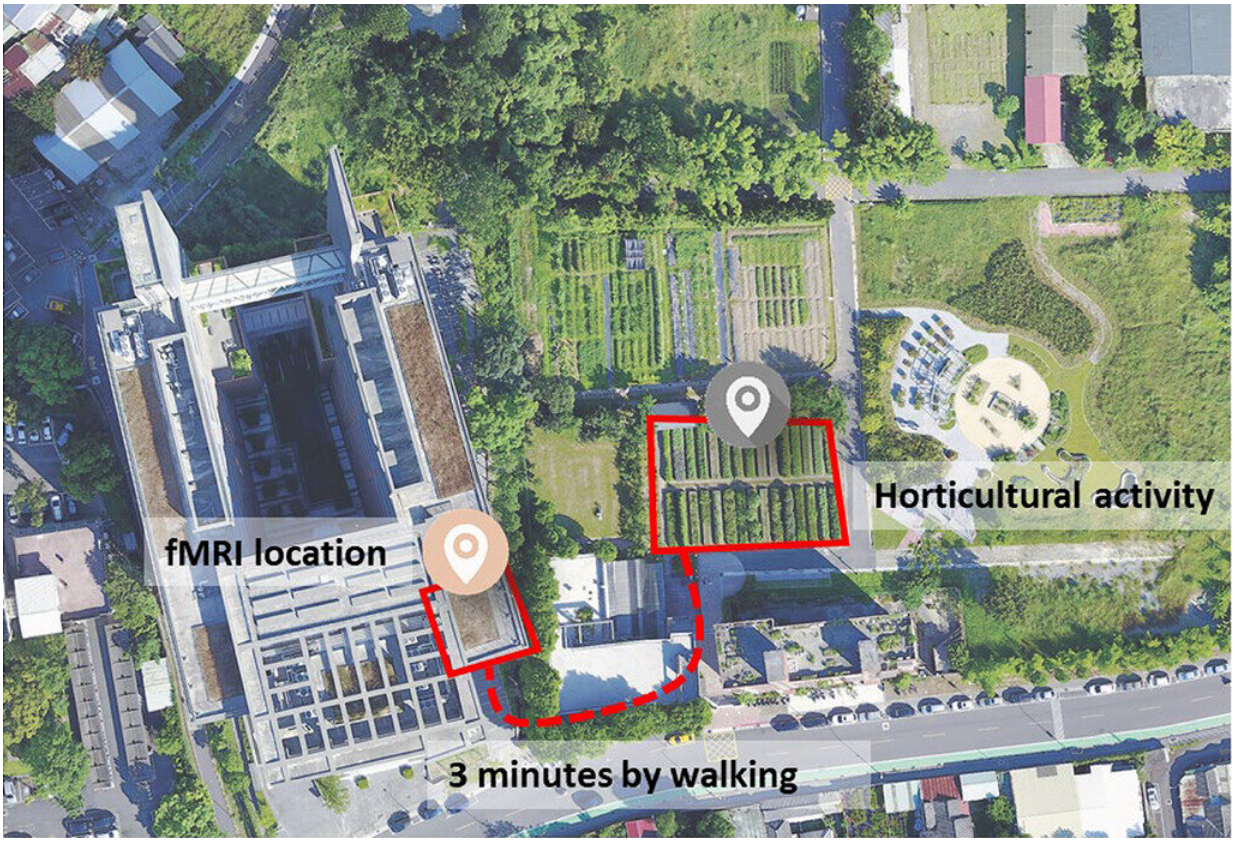

An aerial photo showing the location of the experimental farm where the horticultural activities were conducted and the location where the functional magnetic resonance imaging was performed. Credit: *HortScience* (2022). DOI: 10.21273/HORTSCI16788-22

Research has confirmed that there are physical and mental benefits associated with performing horticultural activities, such as being in contact with soil and viewing plants. In addition, due to the rapidly increasing volume of affective neuroscience research, it is now possible to understand emotional processing in the brain through neuroimaging.

Natural, green environments can reduce stress, while urban environments show the opposite effect in humans. Due to the positive outcomes of horticultural activities, nursing homes and community gardens offer these activities to middle-aged and elderly residents, office workers, and the general public to reduce stress and boost positive emotions.

There are gardening activities that might be appropriate for all ages, but, given that previous studies have not explored the immediate neurological effects of different horticultural activities, a knowledge gap exists. Therefore, this study was designed to generate information about the connection between brain activity and horticultural activities and to examine the link between the impact of horticultural experiences and psychological responses.

Researchers explored the relationship between immediate functional connections and emotional activation after different horticultural activities, namely site preparation and sowing, fertilizing and weeding, and harvesting. Functional magnetic resonance imaging (fMRI) and the Profile of Mood States were used to determine physiological and psychological measurements.

The findings show that the functional connectivity of the brain regions was activated, including the emotional prosody network (e.g., promoting positive thinking, emotional regulation, self-control, and creative thinking). Hence, this study provides evidence that gardening can stimulate functional connectivity, activation of positive emotions, and mindfulness in the brain.

Lead author Chun-Yen Chang is Professor and Head of Horticulture and Landscape Architecture at National Taiwan University in Taipei. Professor Chang is the first landscape scholar to measure the impacts of landscapes on human brain activity using functional magnetic resonance imaging. He is one of the world's foremost experts in landscapes and human health.

The work is published in the journal *HortScience*.

More information: Pei-Hsuan Lai et al, How Do Horticultural Activities Affect Brain Activation and Emotion? Scientific Evidence Based on Functional Connectivity, *HortScience* (2022). DOI: 10.21273/HORTSCI16788-22

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