Special Research Report #601: Specialty Project

Does Being Around Plants Reduce People's Perceptions of Physical Discomfort?

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BACKGROUND

Throughout history, people have benefited from interactions with plants. They customarily give flowers to the ill, who report feeling happier in the presence of plants. Many hospitals include gardens and therapeutic programs using plants. Also, people benefit when exposed to plants in passive situations, such as simply viewing live plants or pictures of plants.

This study was designed to examine the role of plants in people's responses to physical discomfort. Our objective was to determine if healthy adults who passively view interior plants could tolerate physical discomfort longer than adults in settings without plants. If being around plants can help people feel less pain or tolerate pain longer in an experimental setting, these results could be applied to clinical settings, such as health care facilities.

METHODS

Treatments. A windowless office was used. Subjects were randomly assigned to a treatment room with plants, non-plant objects, or nothing (control) added (see photos).

Control treatment

Non-plant objects treatment

Plants treatment

For the plants treatment, one each of the following interior plants was used: Lipstick plant (*Aeschynanthus pulcher*), Chinese evergreen (*Aglaonema* sp.), Bamboo palm (*Chamaedorea seifrizii*), Heart-leaf philodendron (*Philodendron scandens* var. *oxycardium*), and Creeping Charlie (*Pilea nummulariifolia*).
Each person was tested individually. Of the 198 who completed the experiment, 69 participated in the plants treatment, 62 in the non-plant objects treatment, and 67 in the control.

Variables measured. Each person was asked to place his or her hand in ice water and remove the hand when it became uncomfortable. Pain tolerance was measured by recording if subjects held their hands in the ice water for a full 5 minutes or not. They also completed an emotional survey, which measured their feelings, and a 17-item survey of room characteristics to evaluate their impressions of the treatment spaces.

RESULTS

Room characteristics. The room with plants was rated differently from the control on 12 of the 17 room attributes. When plants were present, the room was more associated with positive characteristics on most of the descriptive scales, which included "cheerful," "calming," and "attractive".

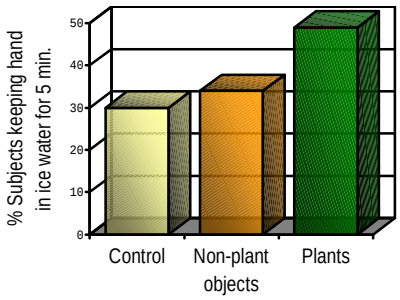
When the room with plants and the room with non-plant objects were compared, both were rated the same on visual characteristics, including "interesting," "colorful," and "ornate." This indicated that the non-plant objects were an effective visual comparison to the plants, since both rooms provided comparable levels of mental interest compared to the dull control room.

The plants treatment was different from the non-plant objects treatment on non-visual variables. This indicated that there are additional positive contributions from plants. When compared to the room with non-plant objects, the room with plants was rated more positively on 6 non-visual variables, including "fresh air," "inviting," and "calming."

Emotional state. Before placing their hands in ice water, people in the room with plants generally reported higher levels of positive emotions, such as "feeling carefree" or "friendly," than those in the control or non-plant objects rooms. People in all treatments generally reported low levels of negative emotions. However, people in the control room felt more "fearful" than those in the room with plants.

After the ice water, there were no differences on most items between those tested in the room with plants compared to the other rooms. The exception was the item "I feel happy or pleased." People continued to feel happier in the presence of plants compared to the other two treatments.

Pain tolerance. The percent of subjects who kept their hands in ice water for 5 minutes was larger in the room with plants than in the control room (see graph).



Subjects in the room with plants were able to tolerate ice water longer than subjects in the control treatment. Thus, they exhibited a higher level of pain tolerance. The percent of subjects who kept their hands in ice water for 5 minutes was also higher in the room with plants than in the non-plant objects room. This demonstrates that the positive benefits of plants are not simply associated with their decorative value.

CONCLUSIONS

This research indicates that people's impressions of a room and their mental well-being can be significantly improved when plants are added. When people perceive a room as calming and cheerful, their outlook is likely to be positive. This study also indicates that decorative objects are not as effective as plants in improving people's perceptions of a room.

This research also confirms previous studies documenting the stress-reducing benefits of passively viewing plants. More importantly, it expands earlier research, which showed that people tolerate severe pain for a few days after major surgery better in the presence of plants. It also demonstrates that people tolerate short-term discomfort better with plants.

Further studies are needed to determine the full potential of incorporating plants in a variety of interior environments to enhance human perceptions of well-being.

IMPACT TO THE INDUSTRY

(1) People report that interiors with plants have fresh air, are calming and inviting, and make them feel happy.
(2) The presence of plants reduces people's feelings of discomfort.
(3) These effects are only produced with plants, not with other colorful objects.

Washington State University horticulturists Virginia Lohr, front, and Caroline Pearson-Mims. Lohr is a professor of horticulture. Pearson-Mims is a research technologist. (Bob Hubner, WSU Photo)

FURTHER INFORMATION:

Lohr, V.I. and C.H. Pearson-Mims. 2000. Physical discomfort may be reduced in the presence of interior plants. HortTechnology 10(1):53-58.

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http://www.wsu.edu/~lohr/hih/pain