

The Effect of the Stress Relaxation by Pot Plants in Indoor Space in Indoor Space

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1. Introduction

The study aims at the comparison of a psychological and physiological effect to the plant in a crowded classroom in three different conditions: ① setting the plant anywhere (Photo 1) ② setting the plant in front of the classroom (Photo 2) and ③ setting the plant on the testees' desk (Photo 3).

2. Method

The testees were 15 males and 12 females aged 21 - 62 years old. The experiment was done on February 17, 2011. (Table 1) The testees set three people per the long desk (0.45m in height × 1.8m in width) to sit. The stress condition by the congestion feeling was reproduced by this state. Psychological tests were done by ① setting the plant in any



Photo 1 Setting the plant anywhere (case I)

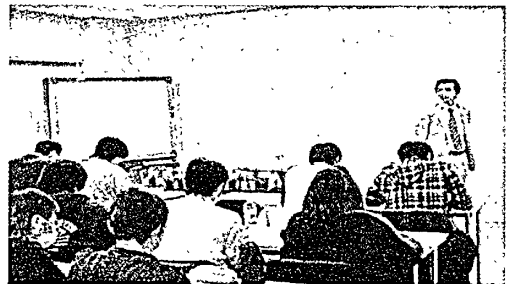


Photo 2 Setting the plant in front of the classroom (case II)



Photo 3 Setting the plant on the testees' desk (case III)

Table 1 The testees

Males	15
Female	12
合計	27

※Age 21 - 62

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Table 2 The semantic differential method

		2	1	0	-1	-2		
1	Natural	----- ----- ----- -----					Artificial	1
2	Waterliss	----- ----- ----- -----					With a high water	2
3	Amiable	----- ----- ----- -----					Unamiable	3
4	Feel lonely	----- ----- ----- -----					Floridness	4
5	Dislike	----- ----- ----- -----					Like	5
6	Pure	----- ----- ----- -----					Awkward	6
7	Feeing of pressure	----- ----- ----- -----					Not Feeing of pressure	7
8	Amenity	----- ----- ----- -----					Disamenity	8
9	Cold	----- ----- ----- -----					Warm	9
10	Bilthe	----- ----- ----- -----					Somber	10
11	Comfortable	----- ----- ----- -----					Uncomfortable	11
12	Bustle	----- ----- ----- -----					Leisurely	12

where (Case I), ② setting the plant in front of the classroom (Case II) and ③ setting plant on the testees desk (Case III) in each lecture of 60 minutes.

The psychology investigation used to all testees the evaluation of six feelings standards by POMS (Profile of Mood States). The stress inspection as a physiology index was obtained by monitoring ten person, amylase by the alpha amylase in salivary glands concentration of were measured.

The SD method was used in order to evaluate the difference in the impression of space (Table 2).

3. Result

When case I , the stress element of T-A (Tension-Anxiety), D (Depression-Dejection), A-H (Anger-Hostility), V (Vigor), F (Fatigue),

and C (Confusion) showed the vicinity of 5~10. Moreover, the element of V showed 15.

When case III , the stress element of T-A, D, A-H, F, and C were reduced, and the vicinity of 3~6 was showed. Under condition stress in reduced that in the first factor.

The stress element of T-A, D, A-H, F, and C were obtained shows 2~5 in case 3, relaxation tendency than in case 2. The element of V was not changed and it existed in the maintenance tendency (Fig. 1).

In the result depended on salivary amylase, the stress was reduced on the case III.

The result of the semantic differential method were analyzed depending on the factor (Fig. 2).

There was difference in the adjectives that composes each factor, it is considered the impression of the space was changed by the existence of the plants (Table. 3~5).

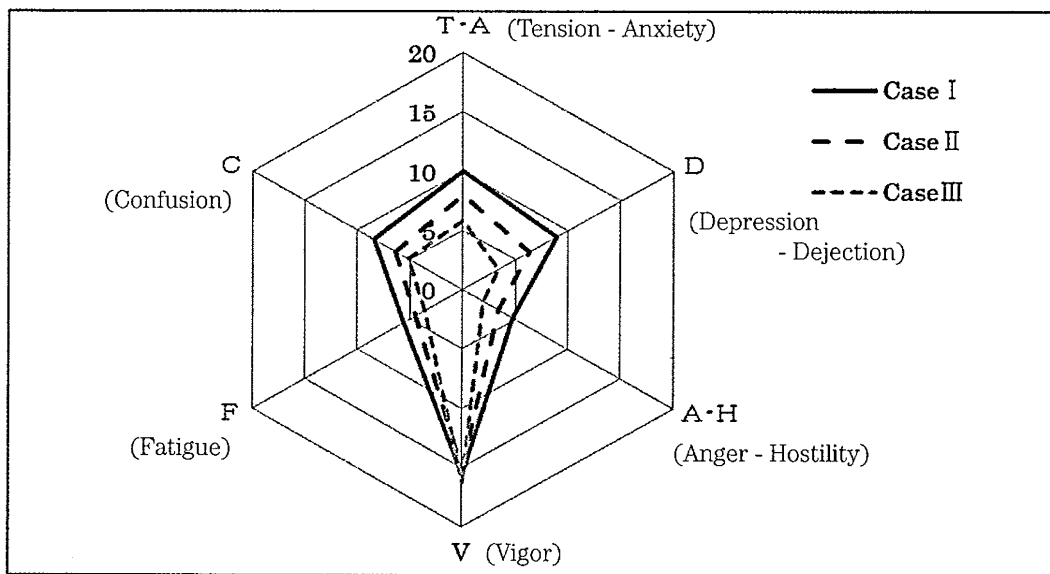


Fig.1 Result by POMS

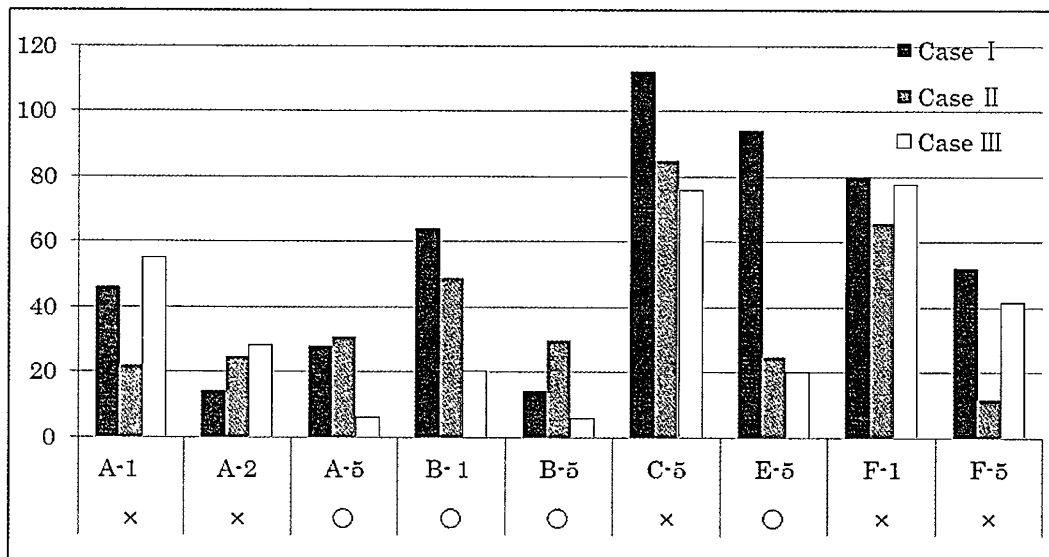


Fig.2 The result depended on salivary amylase.

The graph tabulated by the mean value demonstrated that the value in the state of case III changes in a positive direction than in other situations (Fig. 3).

In this study, the effect of stress relaxing in indoor space by mini pot plants was verified, from the mental index and the physiology

index .

It is suggested that of the impression of the space becomes good if a plant is put close.

In the evaluation of the SD method, it is verified that the existence of a plant influence on the impression of space.

Table 3 The result by the factor analysis. (Case I)

Variable identifier	Case I			
	Factor No. 1 Comfort	Factor No. 2 Calm	Factor No. 3 All-around	Factor No. 4 A feeling of oppression
Like-Dislike	0.735226	0.245448	0.266313	-0.086243479
Pure-Awkward	0.756158	0.126906	0.1740783	-0.357078745
Warm-Cold	0.797942	0.171056	-0.048436	0.395658631
Leisurely-Bustle	0.691237	0.537122	0.0238399	0.095218487
Comfortable-Uncomfortable	0.490198	0.82264	0.3430652	-0.048310633
Amiable-Uncompanionable	0.33141	0.694368	0.255898	-0.303321281
Floridness-Feel lonely	0.178362	0.688154	-0.177137	0.129722863
Amenity-Disamenity	0.108453	0.790459	0.2732305	0.204728033
Natural-Artificial	-0.14971	0.307972	0.7919301	0.2455144
Waterless-With a high water	0.316926	-0.17445	0.8225249	0.119014073
Blithe-Somber	0.320983	0.276181	0.5626006	-0.248329437
Feeling of pressure-Not feeling of pressure	0.005043	0.127037	0.1726355	0.932503466
Contributing rate	23.72%	21.50%	17.03%	12.16%
cumulative contribution ratio	23.72%	45.22%	62.25%	74.41%

Table 4 The result by the factor analysis. (Case II)

Variable identifier	Case II			
	Factor No. 1 Calm	Factor No. 2 Affluence	Factor No. 3 Affinity	Factor No. 4 Refreshing
Warm-Cold	0.587272	0.1715049	0.2414437	0.0319955
Comfortable-Uncomfortable	0.741223	0.3065716	0.3304896	-0.116851
Leisurely-Bustle	0.841095	-0.174766	0.0782834	0.1838829
Pure-Awkward	0.637785	0.5226581	0.3499318	0.017107
Feeling of pressure-Not feeling of pressure	0.657795	0.4593135	-0.339572	-0.063598
Natural-Artificial	-0.02722	0.8638958	-0.076157	0.1162097
Waterless-With a high water	0.287959	0.6721104	0.350967	-0.24321
Like-Dislike	0.276295	0.744453	0.4257526	-0.032937
Blithe-Somber	0.527954	0.2059127	0.6860162	-0.138596
Amiable-Uncompanionable	0.082564	0.0793242	0.8702657	0.2311912
Floridness-Feel lonely	0.396722	0.3574661	0.4453532	-0.508633
Amenity-Disamenity	0.170727	0.0801846	0.1886833	0.9324132
Contributing rate	25.61%	21.44%	18.20%	11.06%
cumulative contribution ratio	25.61%	47.05%	65.25%	76.31%

Table 5 The result by the factor analysis. (Case III)

Variable identifier	Case III	
	Factor No. 1 Consolation	Factor No. 2 A sense of openness
Pure-Awkward	0.8066365	0.14572706
Blithe-Somber	0.9276915	0.068639751
Comfortable-Uncomfortable	0.9670146	0.150746944
Leisurely-Bustle	0.6187269	0.244448273
Warm-Cold	0.483772	0.251917608
Amiable-Uncompanionable	0.5883307	0.294975151
Like-Dislike	0.4981138	0.473132185
Floridness-Feel lonely	0.3713547	0.818825096
Feeling of pressure-Not feeling of pressure	0.0117544	0.636958094
Amenity-Disamenity	0.2686356	0.335490657
Waterless-With a high water	0.2495745	0.365402596
Natural-Artificial	0.1476536	0.137683534
Contributing rate	25.61%	21.44%
cumulative contribution ratio	25.61%	47.05%

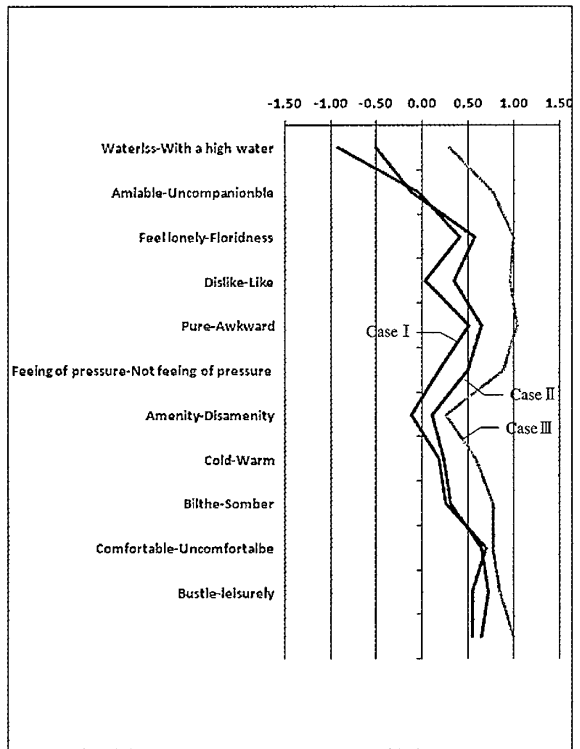


Fig.3 The average profile by SD method.

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