

Depression and Environmental Potential Therapy: Experience the immediate and periodically impact of an urban landscape components that can reduce the symptoms of women's depression

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ABSTRACT

Depression symptoms affect the brain by chemical and physical changes, showing in behavioral variations (Loss of interest in daily activities, Reckless behavior, Concentration problems). In cities, open spaces control citizen reactions by mental and physical health stimulants, positive and stressors. Hence, fundamental plans are needed to identify effective components in environments that can control behavioral changes by decreasing the impact of stressors.

Salutogenic and Diathesis - stress models show that landscapes architecture has an important role in mental health; so, finding basic models providing mental health needs and using the virtual reality help a depressive individual to move in open spaces by stressors reduction.

The method of this study has three steps: categorizing the effective landscape architecture components, Producing or organizing existing environments Exposures that can improve depressive symptoms. Using ANOVA Repetitive measure for the analysis of the immediate and periodic impacts on women's behavioral and biological changes. (Tehran gardens were chosen as a pilot and 300 women were chosen aft first, then 8 women participated in the last level of experience.)

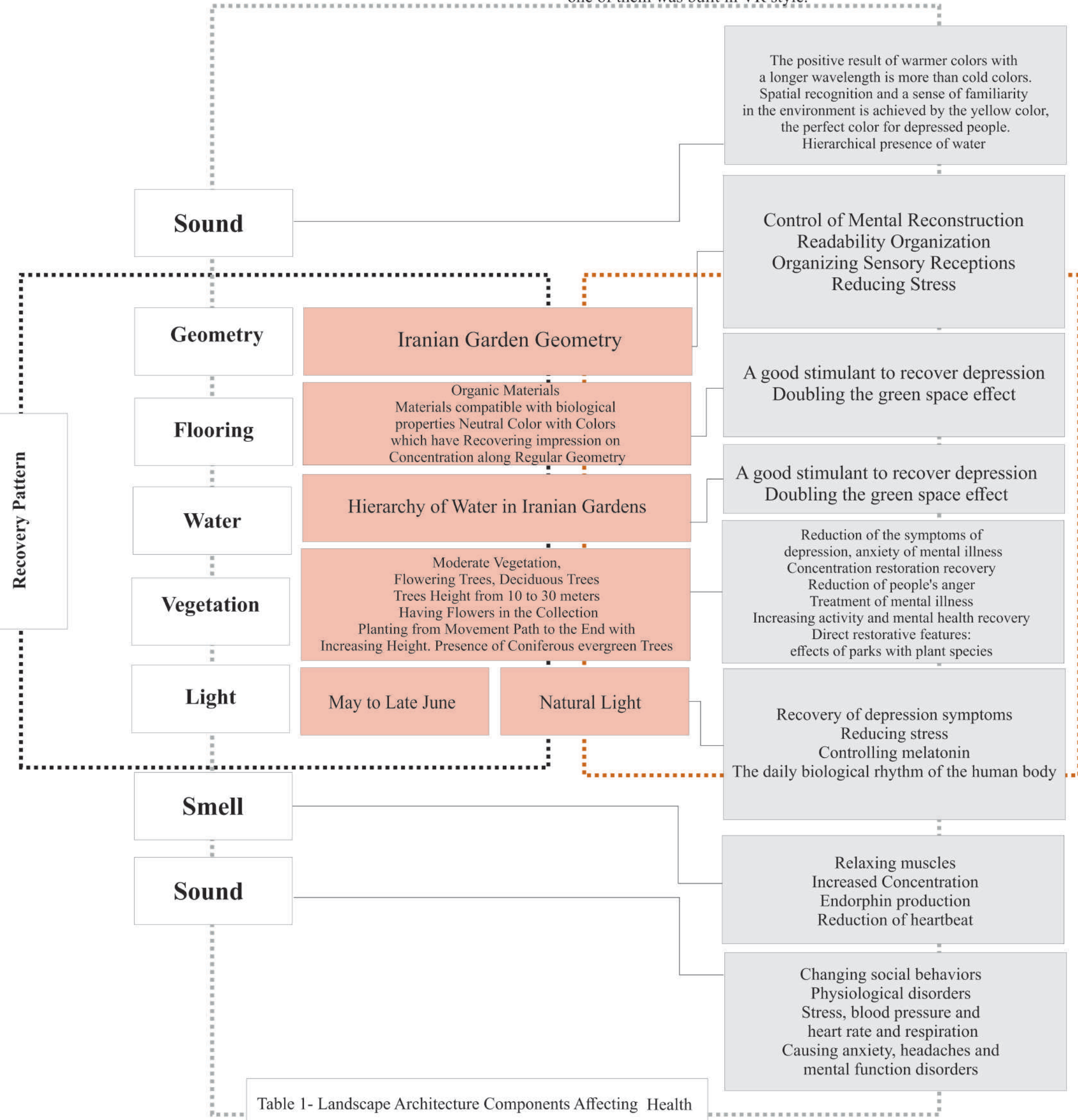
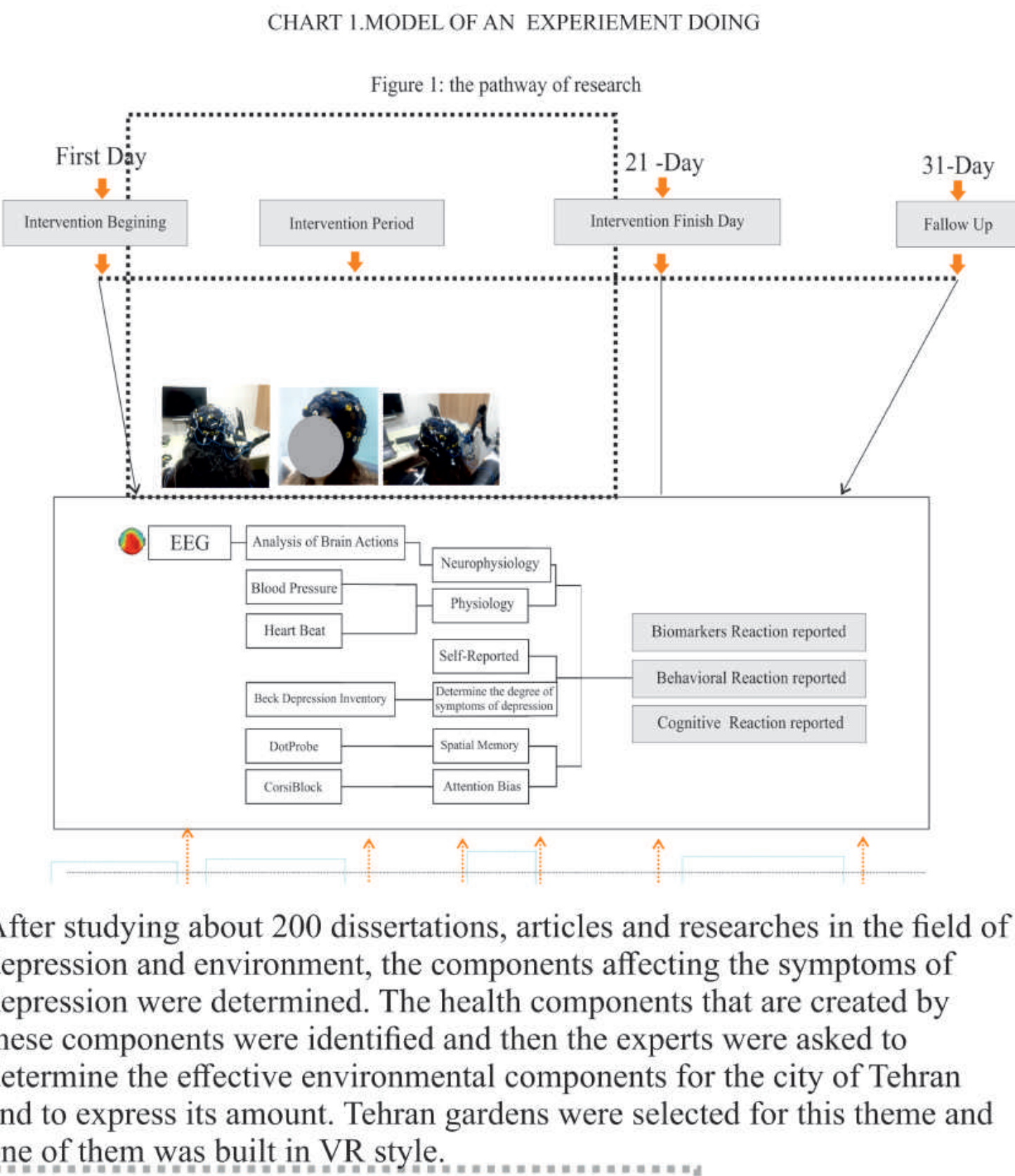
The first finding shows that Selected model (table 1) is effective and has the characteristics of an improved environment (table2, figure1) analysis show positive changes in behavioral-cognitive and biomarkers such as EEG changes, heart rates, and blood pressure in a period of experiment in the laboratory (period:21 day) the experiments did by gear VR Oculus 2018 headset in Cognitive Sciences and Research Center of Shahid Beheshti University.The observation significances with $p<0.01$ can be seen in frontal channels especially in theta and beta. It shows Relationships Between treatment improving period, an environment which is shown in VR glasses. Also, the biomarkers were changed. (table 3,4,5)

The goal of this study is generation or organization urban landscape, becoming as therapy places, reducing environmental stressors. Using VR, HR technology creates opportunities to generate digital instruments and software's to alter the environment in accordance with patients' needs and also lessen therapy period and expenses.

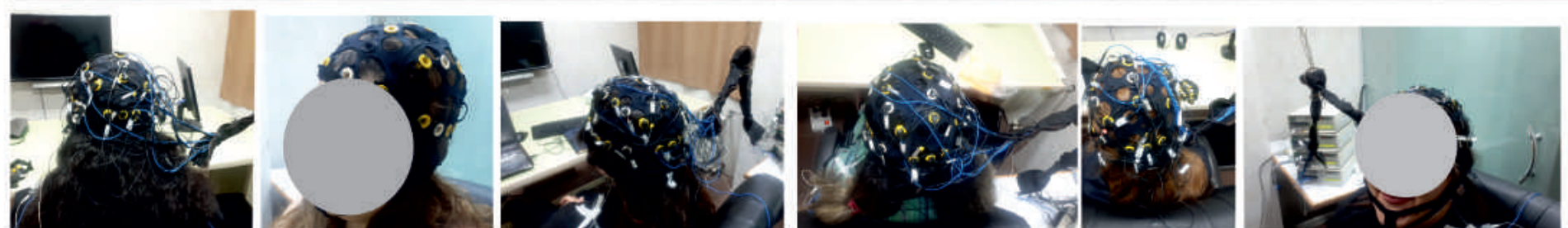
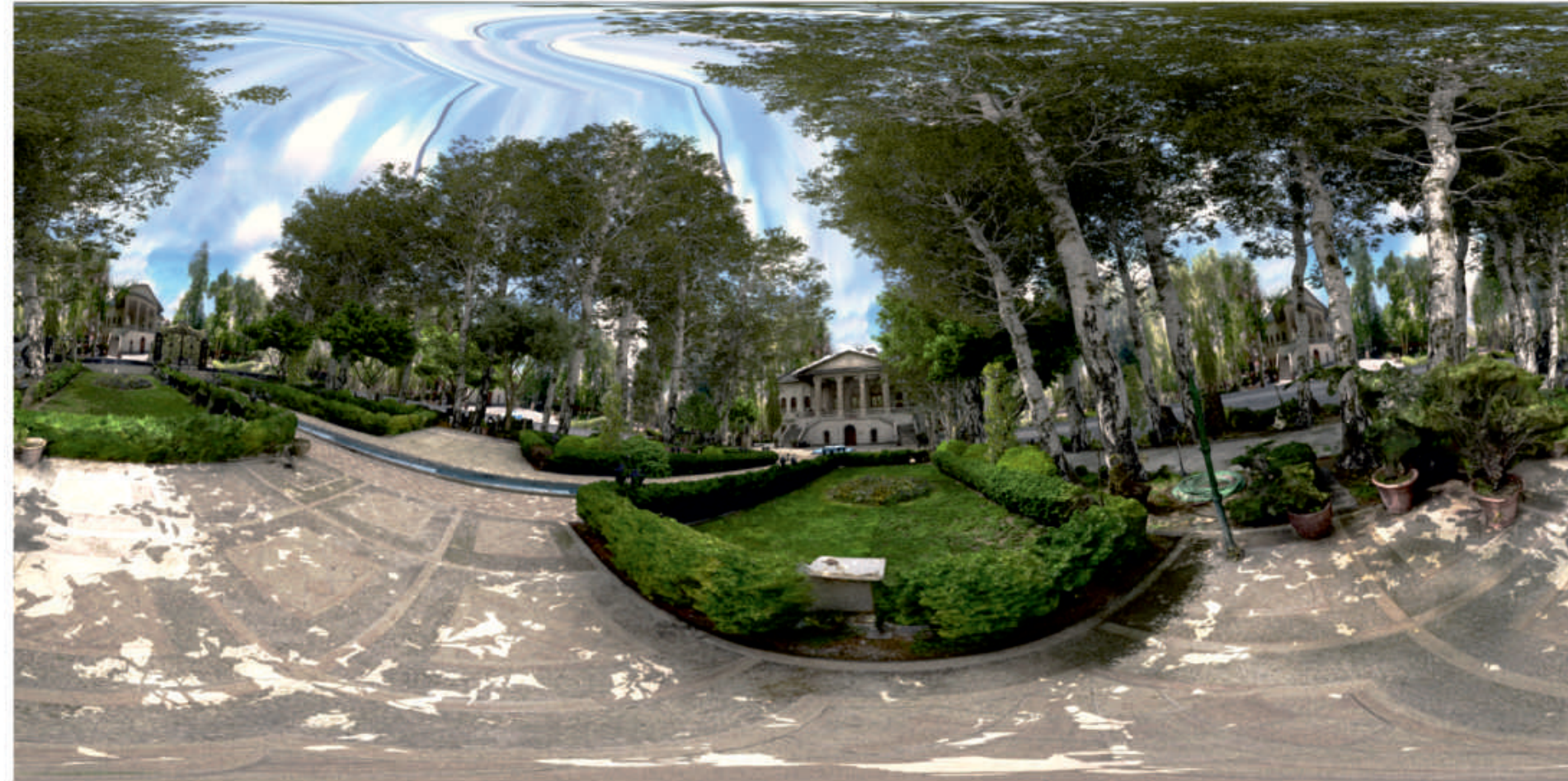
FIRST STEP LITRETURE

Health has an importance place in city space from different dimension. Improving the urban environment will be an effective factor in reducing the women' depressive symptoms. The gardens of Tehran, which are used as the public open space can play an important role in women's health. Based on the obtained pattern of universal subject literature and native experts related to environmental and fundamental components in reducing the depression symptoms of women and it can be said that the pattern of historical gardens in Tehran have hidden the components and they can be used as health microcosms. **Natural light, 20 percent of general lighting with the height of a 4-meter path** will lead to the creation of visual security of women and the reduction of psychological stimuli. **The best natural light for treatment is suggested in May and June.** Floorings with regular geometry, soft edges, water with fountains, and pools in different parts of the garden and varied vegetation species with serotonin stimulation provoke women to move happily in public open gardens.

Geometry and color have been some of the most effective elements in gardens. In addition to their role as an independent effect, they can be traced in other components. It is expected that according to the experts' viewpoints with the features of the landscape architectural components present in the gardens creates future planning in the context of urban city health in the public spaces of the world. In the future projects, it is hoped to observe the effect of the components in the design of the city by quantifying the amount of effect.(abbasian, etal:2018)



METHOD AND RESULTS



Women with depressive symptoms (18 to 45 years old) participated in this experiment for 21 days in the laboratory of Shahid Beheshti University.

The experiment was performed on LAB for 21 days from 8 to 12 o'clock. Each subject participated in the experiment for approximately 40 minutes.

- 1.The first 15 minutes were in the Corsi Visual Spatial test and the 15 minutes in the Dot Probe Task test.
- 2.The EEG test was performed with the closed eyes and open eyes separately for 2 minutes.
- 3.Heart rate and blood pressure were measured
4. The experiment in VR environment was performed for 21 minutes (in 3 min ,1min Rest then the EXP was performed)
- 5.At the end, the heart rate and blood pressure were measured again.
- 6.The EEG test was repeated with the closed eyes and open eyes separately for 2 minutes.

RESULTS

1. The results of each person show that individual changes are seen in the cognitive domain and the extent of depressive symptoms.
- 2.Symptoms of depression and lack of concentration are reduced.
- 3.In the EEG analysis changes were observed in the alpha, beta and theta on day 21. These changes were mostly in the front part of the forehead.
- 4.In 8 points of the route where there was more water and we can see trees and their shades , we saw changes in the EEG trend

These results show that virtual reality film of Iranian gardens with defined components(in table1) over a period of 21 days can help as a treatment aid environment.

Of course, this research should be done on a larger scale (more subjects) and different locations that based on psychotherapy games will be formed.

TABLE 2 BEK SCORE IN 3 LEVELS OF EXPERIMENT

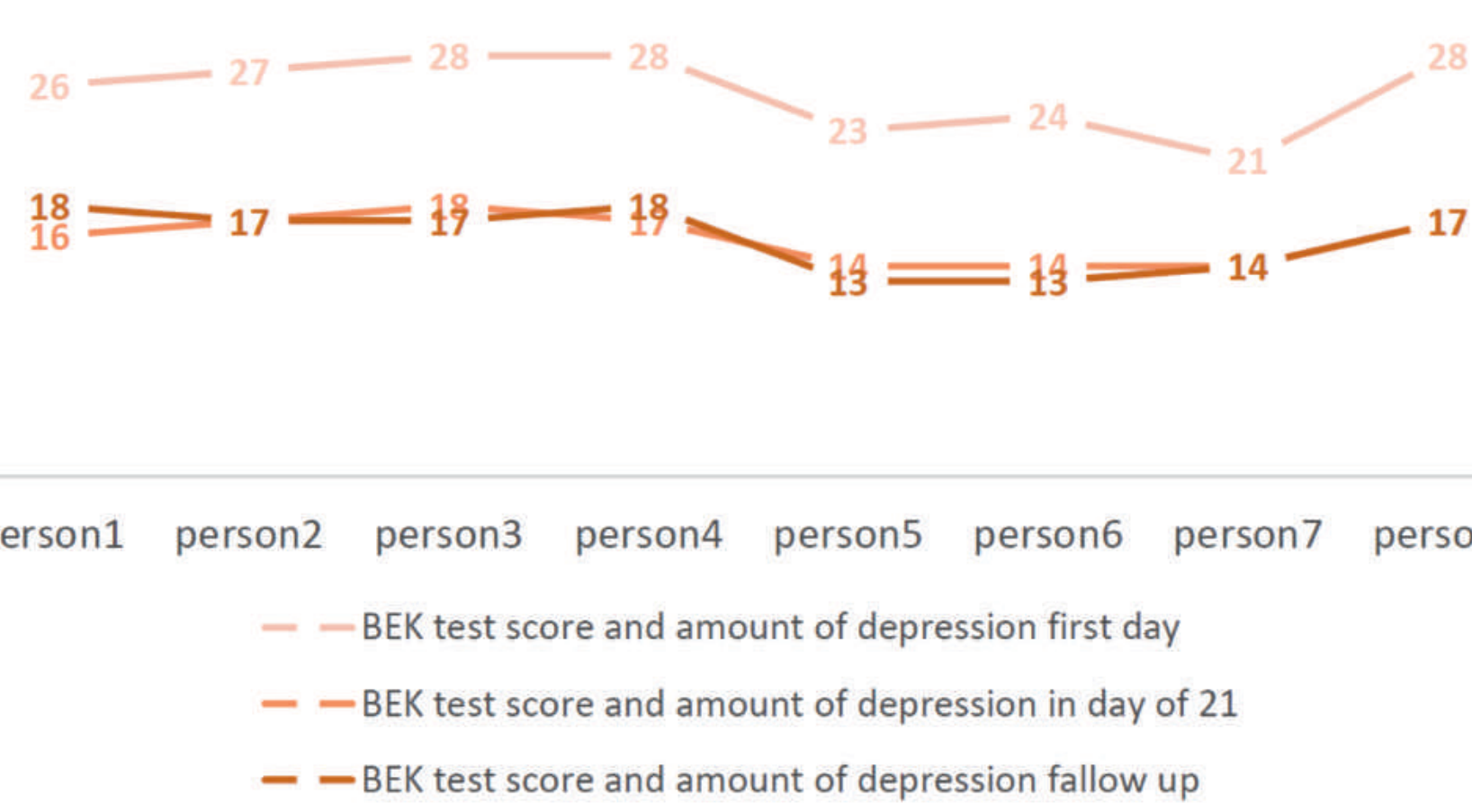


TABLE 3: CORSI BLOCK TAPPING

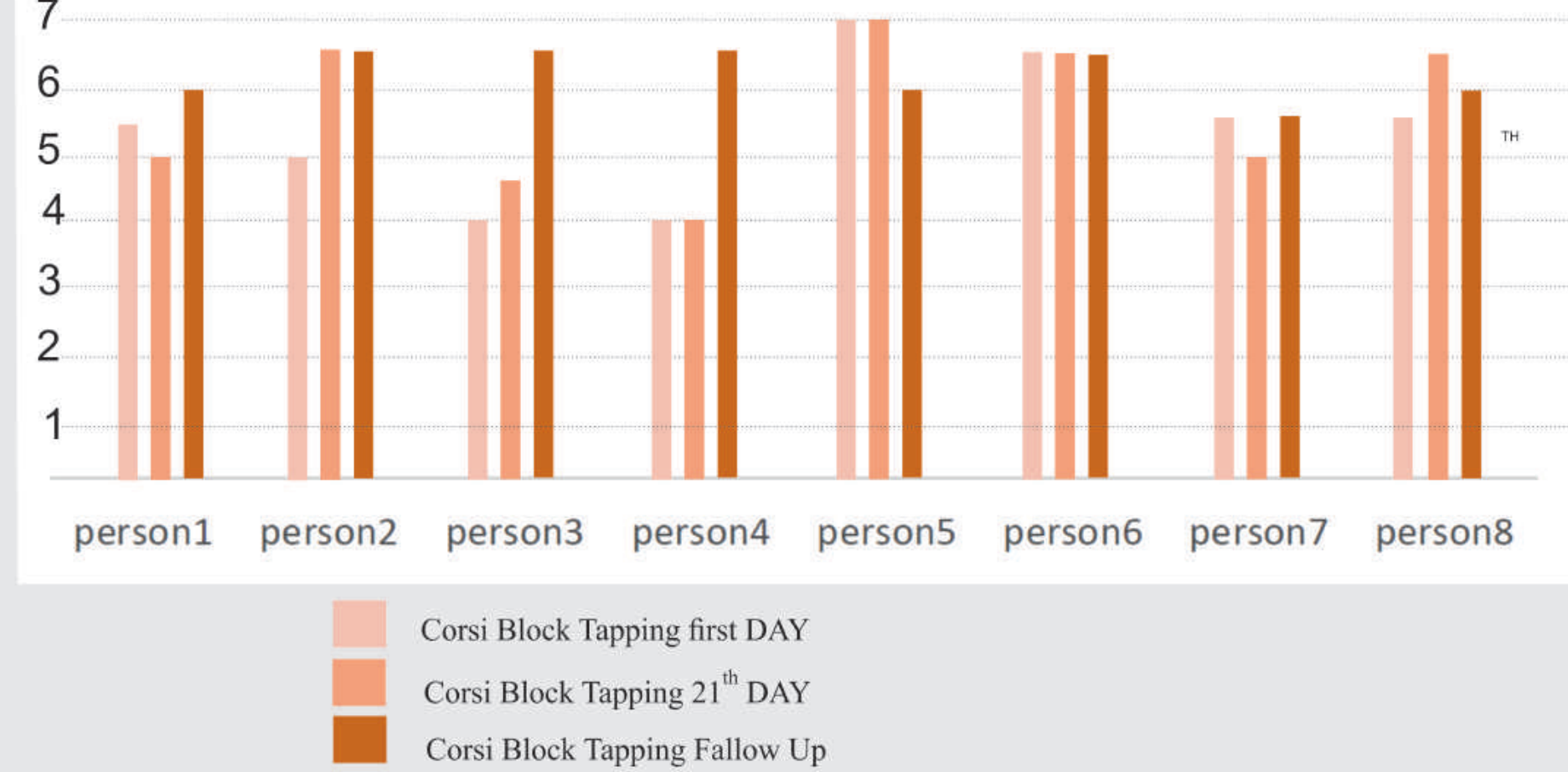


TABLE 4: BACKWARD CORSI BLOCK TAPPING

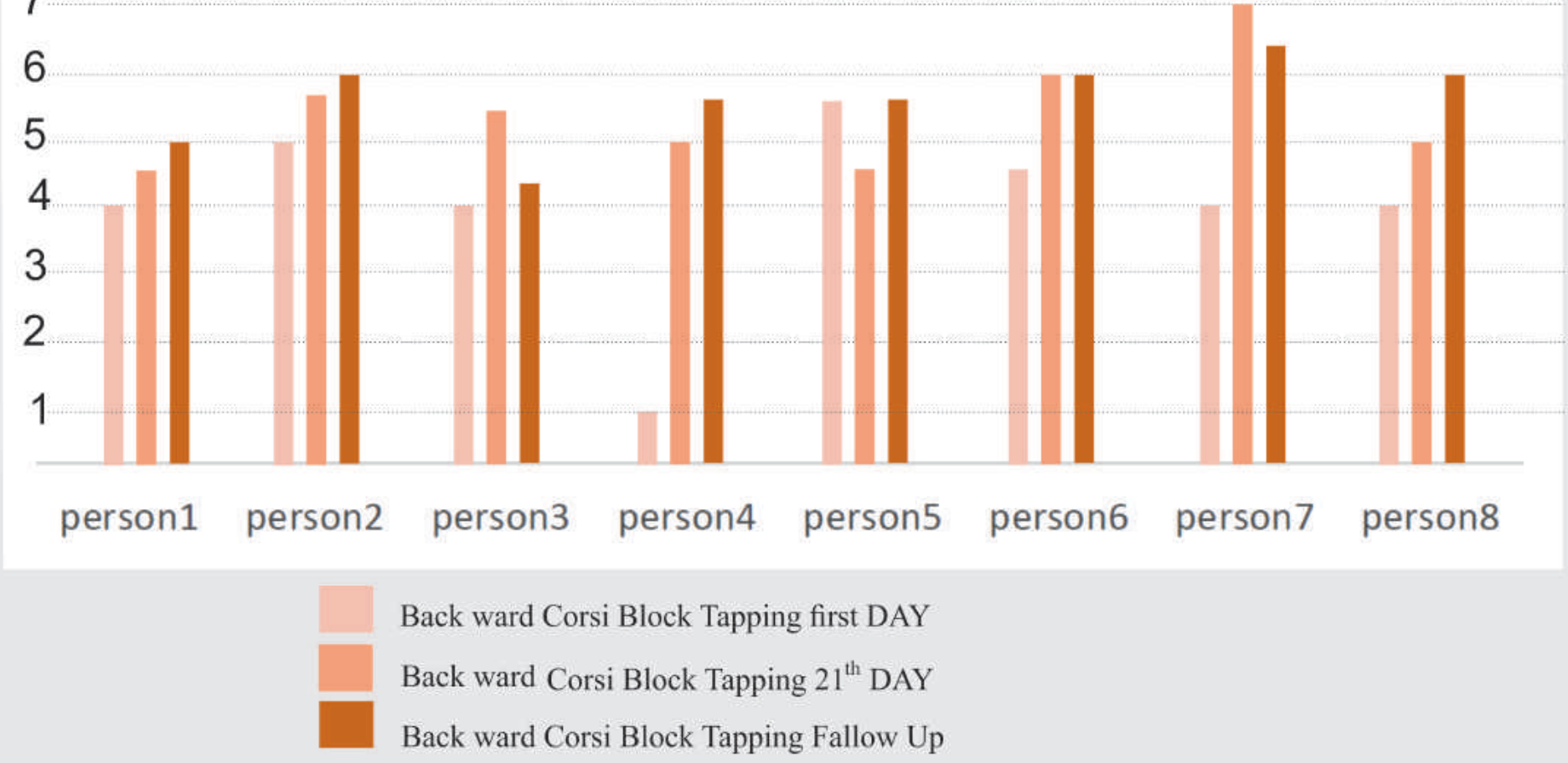


CHART 2: MODEL OF AN EXPERIMENT DOING IN EEG ANALYSIS

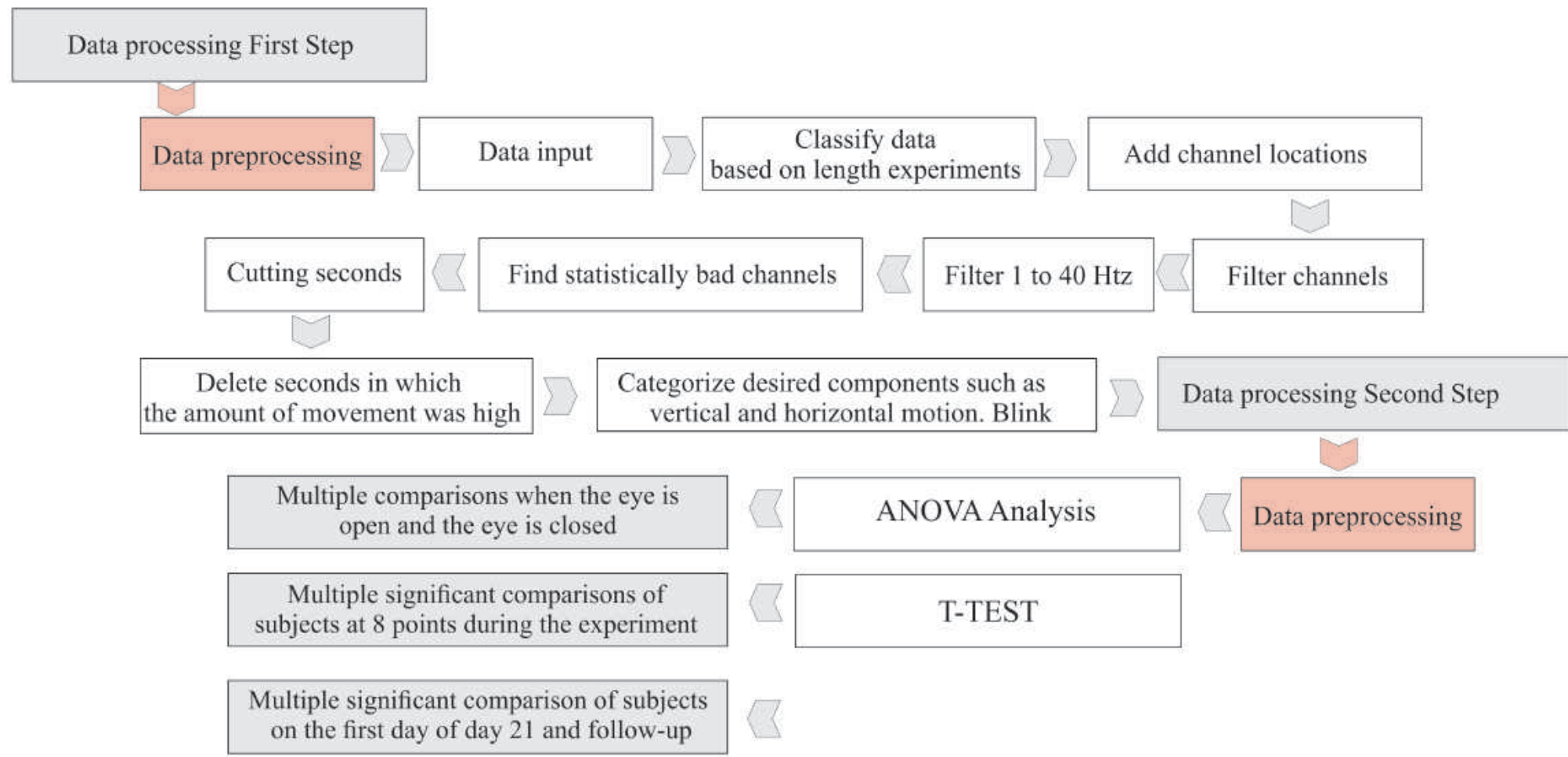
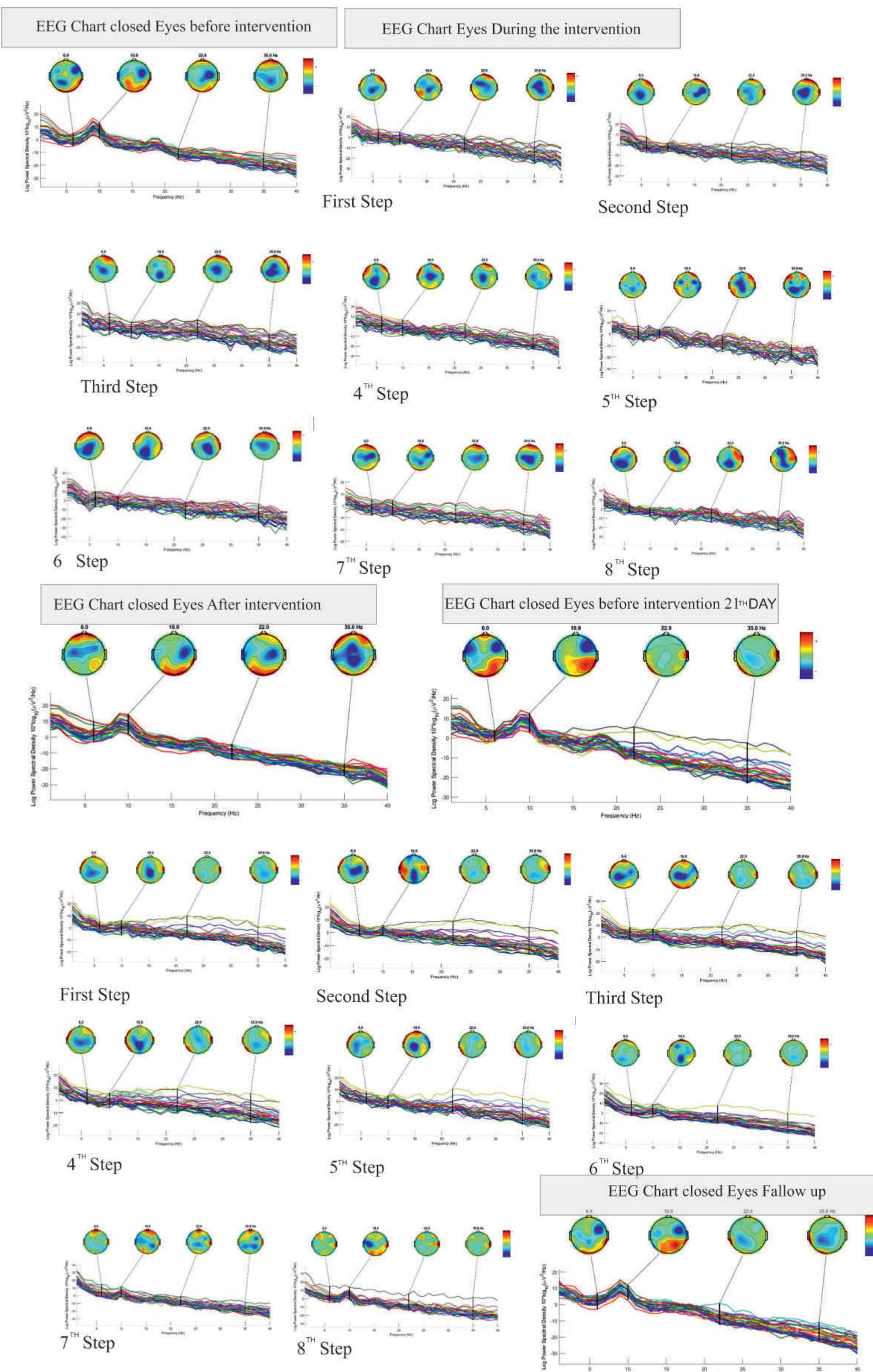


TABLE 5: EEG ANALYSIS IN 8 POINTS OF EXPERIMENTS IN FIRST DAY AND 21st DAY

First Day during Intervention			
'rel_Power_theta'_'Fp1'	0/0069306		3/1587422
'rel_Power_theta'_'Fz'	0/0069306		3/1587822
'rel_Power_beta'_'F8'	0/0065613		3/1860034
'rel_Power_beta'_'F18'	0/0065613		3/1860034
'rel_Power_beta2'_'F8'	0/0048904		3/3323927
'rel_Power_beta2'_'F18'	0/0048904		3/3323927
'delta'_'alpha2'_'T1'	0/0037255		3/4683766
'delta'_'alpha2'_'Cp1'	0/0037255		3/4683766
'theta'_'beta1'_'Fp1'	0/0085773		3/0529368
'theta'_'beta1'_'Fz'	0/0085773		3/0529368
21 st Day during Intervention			
'abs_Power_delta'_'Fp1'	0/0052378		3/3852353
'abs_Power_delta'_'Fz'	0/0052378		3/3852353
'abs_Power_theta'_'Fp1'	0/0008777		3/0961876
'abs_Power_theta'_'Fz'	0/0008777		3/0961876
'abs_Power_beta'_'F3'	0/0072531		3/2141349
'abs_Power_beta'_'Fp1'	0/0027153		3/7341392
'abs_Power_beta'_'Fz'	0/0027153		3/7341392
'abs_Power_beta'_'Tp7'	0/0072531		3/2141349
'abs_Power_beta1'_'Fp1'		0/004472	3/4483852
'abs_Power_beta1'_'Fz'	0/0046472		3/4483852
'abs_Power_beta2'_'Fz'	0/0043013		3/4893019
'abs_Power_beta2'_'Tp7'	0/009776		3/0580957
significancy with $p<0.01$ can be seen in frontal channels specially in theta and beta			
Significancy with $p<0.01$ can be seen in frontal and frontal and tempo-parietal channels specially in delta, theta , beta and alpha vs beta			



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