An Investigation of the Electrical Activity of the Brain during the Treatment with Faradarmani Consciousness Field in the Faradarmangar Population

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ABSTRACT

Mind-body interaction and its manifestations at the brain level have been studied extensively in the field of consciousness research. Faradarmani Consciousness Field was founded and introduced by Mohammad Ali Taheri and is a method of connecting with the Cosmic Consciousness Network (CCN) through the human mind and the brain has a detective role in this process. As a result of this connection, the scanning process of the state of a being, e.g., the health status of the cells and consequently organs, is performed. This study was conducted to evaluate the effects of the Faradarmani Consciousness Field connection on electroencephalogram (EEG) features as an important biomarker of brain functioning. The results showed that there was a significant increase in the gamma2 frequency band (35-40 Hz) power in the frontal lobe in the medial frontal gyrus (BA6) and paracentral lobule (BA31) of the brain during the task condition compared to the rest condition in a Faradarmangar population. Considering the cortical electrical activity of Faradarmangar's brain during the Faradarmani Consciousness Field Connection, characterizing the increase in the power of gamma wave and the activity of the areas affecting memory, attention, perception, and default mode network intrinsic activity. This manifestation distinguishes Faradarmani Consciousness Field connection from other known methods dealing with the mind-body interaction criterion, mainly different types of mediation.

Keywords: Faradarmani Consciousness Field; Taheri Consciousness Fields, Cosmic Consciousness Network; Default mode network; EEG; Faradarmangar; gamma wave; Mind-body

INTRODUCTION

Consciousness and its nature are unknown to the world of science (Hameroff and Penrose, 2014). Where consciousness is placed, its internal and external dimensions, how we experience it, and so on are important issues, which are generally unanswered or with different answers based on the field of study. The role of the brain in providing the necessary conditions for conscious experience is an interesting and challenging scientific topic today and is a common point in many related experimental studies (LeDoux *et al.*, 2020).

One of the oldest methods of examining consciousness manifestations is by examining the electrical activity of the brain, named electroencephalography (EEG). Hans Berger recorded the first human electroencephalograms (EEGs) in 1924 with the goal of discovering the physiological basis of psychic phenomena, however, the result of his study was led to characterizing some brain's wave patterns including α and β waves, and coining the term "electroencephalogram" (Millett, 2001). Later, and with the help of numerous studies, the brain activity details based on cortical areas and waves frequencies were found. The power of waves in the brain during different brain activities has been determined; the waves with higher than 30 Hz frequency (gamma waves) have been linked to diverse cognitive functioning, including general neural correlate contents of consciousness (Crick, 1990), conscious perception (Meador *et al.* 2002), solving binding problems (Golledge et al, 1996), attention (Landau *et al.* 2007), working memory, and long-term memory processes (Jensen *et al.* 2007). Other brain waves with lower than 30 Hz frequency, beta (12–30 Hz), alpha (8–12 Hz), the-ta (4–8 Hz), and delta (0.5–4 Hz), have been presented as oscillating electrical voltages in different states of relaxed, very relaxed, deeply relaxed, and sleep, respectively (Abhang *et al.* 2016). Moreover, distinct cortical electrically active areas of the brain (a total of 52 Brodmann areas grouped into 11 histological areas) were determined (Clarke, 1996). These different parts of the cerebral cortex are involved in different cognitive and behavioral functions (Tortora and Derrickson, 2013).

The distinction between task and rest states in the brain electrical activity measurements is the main step of consciousness related studies. Resting condition or basal state of the brain and its differences with the state of activity are described in several ways; Koch *et al.* revealed new results demonstrating the neuroanatomical manifestations of consciousness are predominantly restricted to a posterior cortical hot zone that comprises sensory regions, rather than to a fronto-parietal network responsible for task monitoring and reporting (Koch *et al.* 2016).

The default mode network (DMN) was originally described by Shulman *et al.* and subsequently, Raichle *et al.* who observed that when a person is not focused on the outside world special brain regions experienced increased metabolic activity and decreased activity when engaged in a goal-directed (i.e., cognitively demanding) behavior (Shulman *et al.* 1997, Raichle *et al.* 2001). These regions also named default mode resting state network (DMRSN) constitute a set of brain areas: the ventral and dorsal medial prefrontal cortices (BA 24, 10m, 10r, 10p, 32a, 32c, 9), posterior cingulate/retrosplenial cortex (BA 29/30, 23/31), inferior parietal lobule (BA 39, 40), lateral temporal cortex (BA 21), and hippocampal formation (Buckner *et al.* 2008). Over the past two decades, it is founded that the default-mode network

(DMN) has putative relationship to self-cognition (Gusnard *et al.* 2001) and mind wandering (Mason *et al.* 2007) and human consciousness (Li *et al.*, 2021) Moreover, it is founded that the activity of the default mode network (DMN) is represented in EEG gamma power across the frontal and midline regions (Berkovich-Ohana *et al.* 2012, 2014).

Mind and body relationship investigation by applying task monitoring using various methods of meditation is one of the main areas of consciousness studies in healthy persons and deals with task manifestations at brain level. Kaur and Singh conducted a review of research into the effects of different types of meditation on brain waves (Kaur and Singh 2015). In this review, Buddhist meditation, Transcending meditation (TM), Yoga Meditation and some other lesser-known types have been investigated and it turned out a rise in delta, theta, and alpha frequency bands in frontal, occipital and parietal brain areas identify differ-ent meditation states. Moreover, Desai *et al.* did a comprehensive review of fifteen authoritative ar-ticles on the various methods of yoga and their ef-fects on the brain waves of individuals (Desai *et al.* 2015). In this study, it has been found that a vari-ety of yoga techniques have a significant effect on increasing the alpha, beta, and theta waves in the frontal cortex. Lomas *et al.* in a systematic review of 56 papers, consisting of 1358 healthy individ-uals, reveal that Mindfulness was associated with enhanced alpha and theta power due to its state of relaxed alertness (Lomas *et al.* 2015). Moreover, no consistent patterns were observed in terms of beta, delta, and gamma in this study. Various stud-ies emphasize that long-term meditation can sup-press and reduce default mode processing and its related gamma wave power (Berkovich-Ohana *et al.* 2012, 2014; Brewer *et al.* 2011; Garrison *et al.* 2015)

In addition to numerous studies on the var-ious types of meditation with emphasize on the significant role of increasing alpha, delta, and the-ta waves and the reduction of gamma waves, few meditations practice have been found increase high gamma wave and other meditation related waves; however the increase occurs in non-default network brain regions. Braboszcz *et al.* indicated higher 60–110 Hz gamma (High gamma) ampli-tude across the parietal and occipital regions of highly-experienced meditators' brain in compar-ison with control in specific conditions in three different meditation traditions___Vipassana, Him-alayan Yoga and Isha Shoonya___ (Braboszcz *et al.*, 2017). Moreover, increased occipital gamma pow-er related to long-term meditational expertise and enhanced sensory awareness studied (Cahn *et al.*, 2010) and some related studies reviewed (Cahn and Polich, 2006).

The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and scientific theo-ries have been proposed in this area. In the1980s, Mohammad Ali Taheri introduced novel fields with non-material/ non-energetic nature named Taheri-Consciousness Fields (TCFs). In this per-spective, T-Consciousness is one of the three ex-isting elements of the universe apart from matter and energy. According to this theory, there are var-ious TCFs with different functions, which are the subcategories of a networked universal internet called the Cosmic Consciousness Network (CCN). The major difference between the theory of TCFs and other theoretical concepts about conscious-ness is related to the practical application of the TCFs. TCFs can be applied to all living and non-liv-ing creatures, including plants, animals, microor-

ganisms, materials, etc.

Mohammad Ali Taheri, the founder of Erfan Keyhani Halqeh, a school of thought, introduced a new science in 2020 as a branch of this school. He coined the term Sciencefact for this new science because it utilizes scientific investigations to prove the existence of T-Consciousness as an irrefutable phenomenon and a fact. Although science focuses solely on the study of matter and energy and Sciencefact, by contrast, explores the effects of the [non-material/non-energetic] TCFs, Sciencefact has provided a common ground between the two by conducting reproducible laboratory experiments in various scientific fields, and it has used the scientific approach in proving TCFs.

The influence of the TCFs begins with the Connection between CCN as the Whole Taheri Consciousness of the universe and the subjects of study as a part. This Connection called "Ettesal" is established by a Faradarmangar's mind (a certified and trained individual who has been entrusted with the TCFs). The human mind has an intermediary role (Announcer) which plays a part by fleeting attention to the subject of study and then the main achievement obtained as a result of the effects of the TCFs. These fields cannot be directly measured by science, but it is possible to investigate their effects on various subjects through reproducible laboratory experiments (Taheri 2013).

The research methodology in the study of T-Consciousness has been founded on the process of *Assumption, Argument, and Proof*, in which the basic Assumption is: The Cosmos was formed by a third element called T-Consciousness that is different from matter and energy.

The Argument: The existence of TCFs can be demonstrated by its effects on matter and energy (e.g., humans, animals, plants, microorganisms, cells, materials, etc.)

The Proof: is the scientific verification of the effects of TCFs on matter and energy (according to the Argument) through various reproducible scientific experiments.

Accordingly, to investigate and verify the existence, effects, and mechanisms of TCFs, the following five research phases (Phases 0 through 4), and the aims of each phase are outlined below.

Phase-0 studies aim to prove the existence of TCFs by observing their effects. The nature of T-Consciousness and what it is will not be addressed in this phase. Phase-1 explores the varied effects of different TCFs. Phase-2 examines the reason behind the varied effects of these fields. Phase-3 investigates the mechanism of TCFs effects on matter and energy. Finally, Phase-4 draws significant conclusions, particularly with regard to the *mind and memory of matter* and their relation to the T-Consciousness, etc.

In this study, we examined the electrical activity of the brains of people who have the ability to connect independently to the CCN which is named Faradarmangar.

METHOD

This study is designed to test the effects of Faradarmani CF on electroencephalography (EEG) features as an important biomarker of brain functioning. 36 healthy Faradarmangars (28 women and 8 men) in the age range of 20-50 years (M = 36.5, SD = 6.20) who have successfully completed the mentioned two-year training course, attended the present study.

Faradarmani Consciousness Field application

In order to apply the Faradarmani CF, in the Faradarmangar population, each person can announce the Faradarmani CF for himself/herself. In other words, a Faradarmangar initiates the connection between the subject under study (in this project himself) and the CCN, here named the *announcement*. Announcement is a process in which Taheri or any certified announcer declares and send the specific information of the subject under study to the CCN by just recalling his/her name, the agreed time, and the location of the subject. The subject under study can be a patient or any individual who is willing to experience the connection. In the present study, subject of study is the announcer himself (Fig. 1). Faradarmangar (as announcer in Fig. 1) according to Taheri is a trained and certified individual who took and completed specific training courses taught by Mohammad Ali Taheri or his certified masters. In these courses, which takes almost two years to complete under Taheri's supervision, the students learn theoretically and practically how to use TCFs.

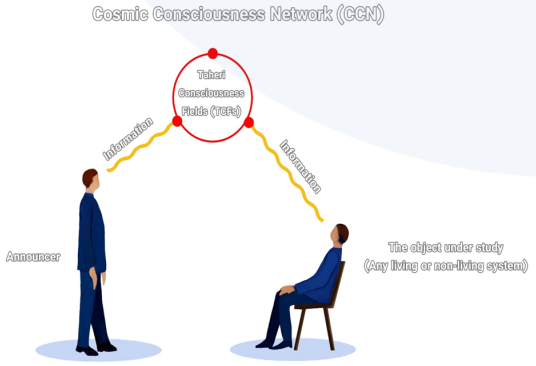

Figure 1. Announcement and Connection between the subject of study and the Cosmic Consciousness Network (CCN) through TCFs.

Establishing the connection to the CCN: a process that is available to everyone anywhere in the world, 24 hours a day. Apart from the present study, in which the announcers themselves have been the subject of the study, for any study/experience using TCFs, any researcher/volunteer must register on the COSMOintel Website (www.cosmointel.com). Once registered, go to the researcher/connection experience section and fill out a form. In order to study/experience at any given time and place, the researchers/volunteers simply need to introduce the testing center/himself/herself to the guidance center. The request is free of charge.

EEG assay

All volunteers were seated in a comfortably sound and light attenuated room, while 15 min-utes or more of closed-eyes task/rest EEG data were collected by means of a 19-channel (Fp1, Fp2, F7, F3, Fz, F4, F8, T3, C3, Cz, C4, T4, T5, P3, Pz, P4, T6, O1 and O2) device (EEGR 19-26, Medicom company, Russia). In the task condition, the subject was asked to start Faradarmani CF Connection according to Taheri's theory.

Since different EEG frequencies reflect differ-ent functions, data were digitally filtered into ten frequency bands: delta (1–4 Hz), theta (4–8 Hz), al-pha-1 (8–10 Hz), alpha-2 (10–12 Hz), beta-1 (12–15 Hz), beta-2 (15–18 Hz), beta-3 (18–25 Hz), high beta (25-30 Hz), gamma 1 (30-35 Hz) and gamma 2 (35-40 Hz). At least two minutes of artifact-free data were extracted from the EEG's total record for quantitative analysis. Power-spectral analysis was performed with Fast Fourier Transform (FFT). For each of the 19 monopolar derivations, abso-lute and relative power and mean frequency were computed for the mentioned frequency bands. Ab-solute power (UV Square) was the only parameter used to create the functional images of neuronal electrical activity for the 5 classical bands of EEG (delta, theta, alpha, beta and gamma).

EEG-source localization analysis

In this study, the three-dimensional intracerebral distribution of neuronal electrical activity or current density was assessed using Low Resolution Brain Electromagnetic Tomography (LORETA) with a resolution of 1Hz, from 1 to 40 Hz. LORETA computes this parameter from the scalp-recorded potential distribution by assuming that the smoothest of all possible inverse solutions is the most plausible, consistent with the assumption that neighboring neurons are simultaneously and synchronously active (Pascual-Marqui *et al.*, 1994). The 3D solution space in LORETA was restricted to the cortical gray matter and hippocampus in the Talairach human brain atlas (Talairach and Tournoux, 1988), as determined by the corresponding digitized Probability Atlas (Brain Imaging Center, Montreal Neurologic Institute). LORETA functional images of spectral density were estimated for the mentioned ten frequency band (previous sections).

STATISTICAL ANALYSIS

The statistical method for comparing the individuals of each group in the two modes of rest and task was the t-test of dependent groups. The T-lev-el thresholds corresponded to statistically signifi-cant thresholds ($p<0.05$ and $p<0.01$).

RESULTS

The results showed that there was a signifi-cant increase in gamma2 wave, 35-40 Hz, on fron-to-central areas of the brain in task condition com-pared to the rest condition in this population (Fig 2)

As shown in Table 1, the amount of increase in the power of gamma 2 wave, in F4, F8, Fz, and Cz channels is significant. The most significant increase of power is in the Fz, and the most increase in comparison with the control is in the F8.

Table 1. Power of gamma 2 (35-40 Hz) frequency band in all 19 channels in the rest and task and their difference

Channel	Rest		Task		Diff		
	Mean/μV^2	SD	Mean/μV^2	SD	Mean/μV^2	P value	Diff. Percent
FP1-AVE	0.79	0.47	0.97	0.72	0.19	0.22	23.80%
FP2-AVE	0.68	0.39	0.97	0.89	0.29	0.13	42.78%
F3-AVE	0.62	0.59	0.82	0.70	0.20	0.09	31.25%
F4-AVE	0.78	0.83	1.14	0.95	0.35	0.05	45.18%
C3-AVE	0.44	0.30	0.72	0.72	0.29	0.07	66.25%
C4-AVE	0.60	0.36	1.06	1.00	0.46	0.08	77.24%
P3-AVE	0.43	0.29	0.67	0.66	0.23	0.10	53.46%
P4-AVE	0.54	0.35	0.84	0.83	0.31	0.07	56.73%
O1-AVE	0.63	0.50	0.83	0.72	0.20	0.14	31.98%
O2-AVE	0.81	0.55	0.99	0.91	0.18	0.24	22.10%
F7-AVE	0.75	0.55	1.09	0.73	0.34	0.16	44.62%
F8-AVE	0.81	0.37	1.41	0.89	0.59	0.05	72.95%
T3-AVE	0.59	0.40	0.85	0.68	0.26	0.14	44.34%
T4-AVE	0.93	0.47	1.56	1.46	0.63	0.19	68.25%
T5-AVE	0.49	0.33	0.61	0.48	0.12	0.26	24.03%
T6-AVE	0.60	0.37	0.79	0.68	0.19	0.32	30.78%
Fz-AVE	0.62	0.57	0.89	0.79	0.27	0.03	43.82%
Cz-AVE	0.56	0.37	0.93	0.91	0.36	0.04	64.71%
Pz-AVE	0.48	0.32	0.75	0.75	0.26	0.09	54.74%

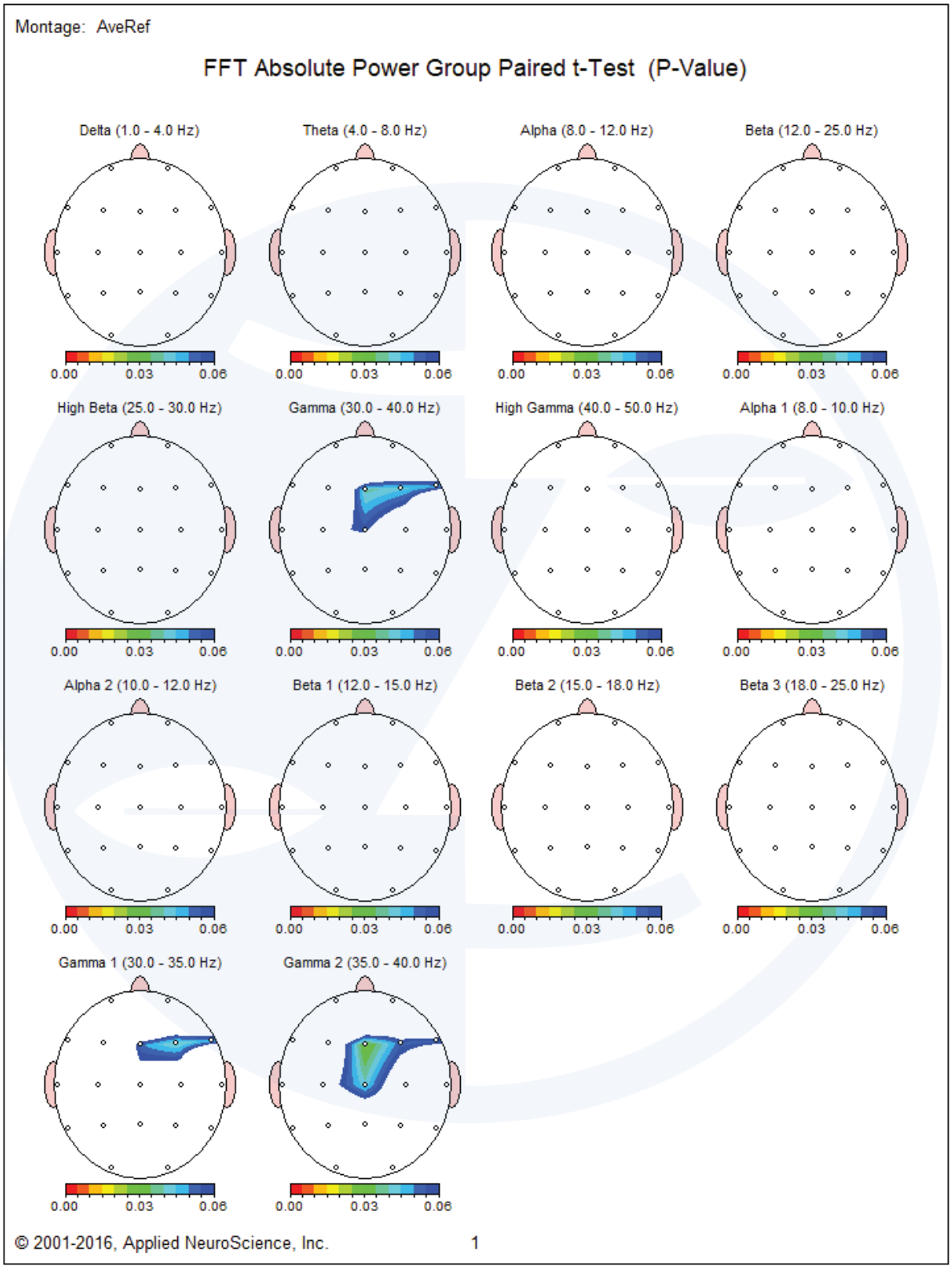

Figure 2. Gamma increase in tasks (Fz, F4, F8, Cz; Sig:<0.05).

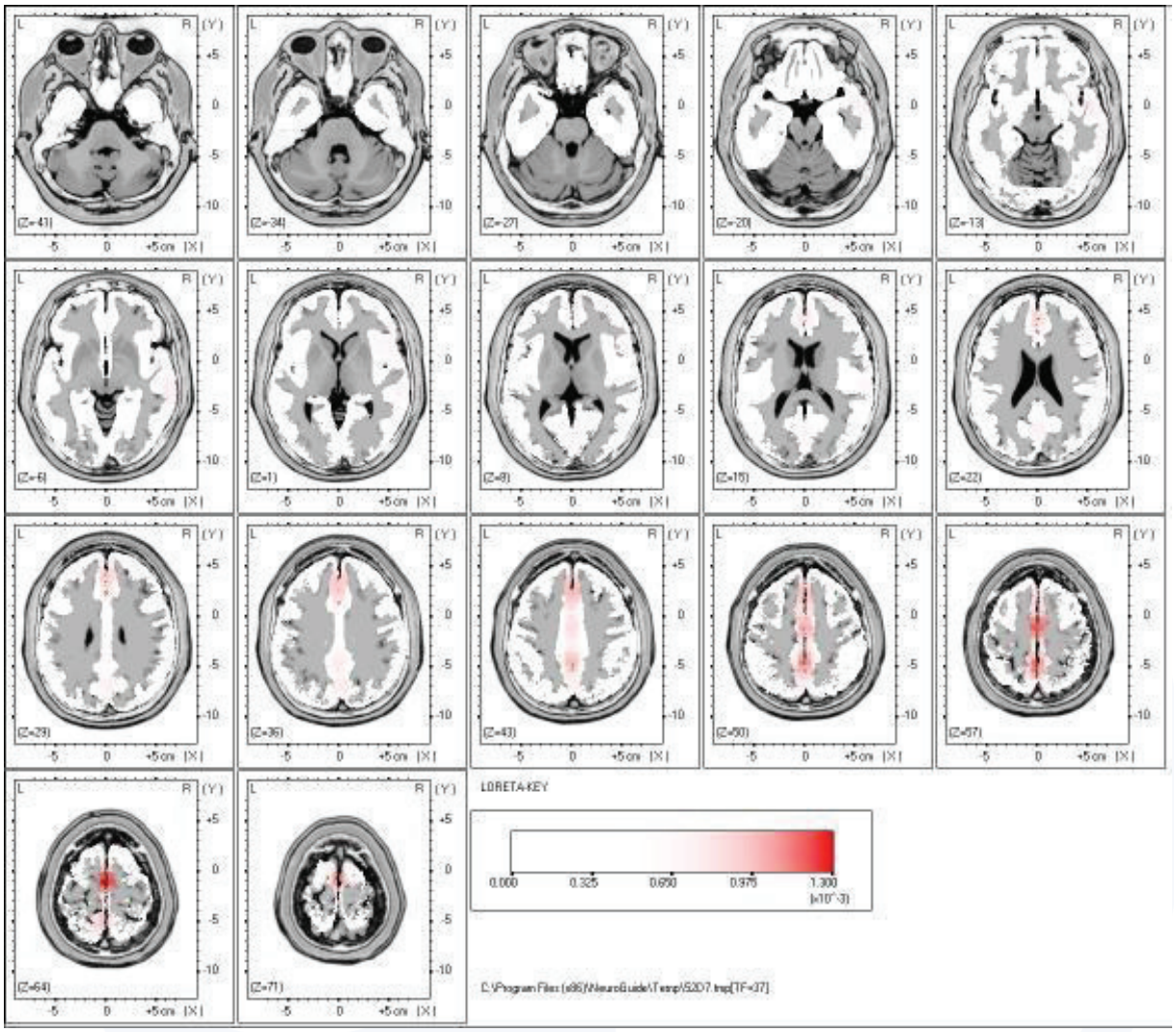

Figure 3. 2D regions of activity in the brain of the Faradarmangar population during Faradarmani Consciousness Field connection.

The LORETA results indicate a significant dif-ference in the following areas. The high-precision point is the middle frontal. This area corresponds to Broadman District 6. Moreover, the second point is the paracentral lobule corresponding to Broadman District 31. 2D and 3D representations of regions of activity in the brain of the Faradarmangar in the task condition regarding the rest condition during the Faradarmani Consciousness Field announcement, are shown in figures 3 and 4, respectively.

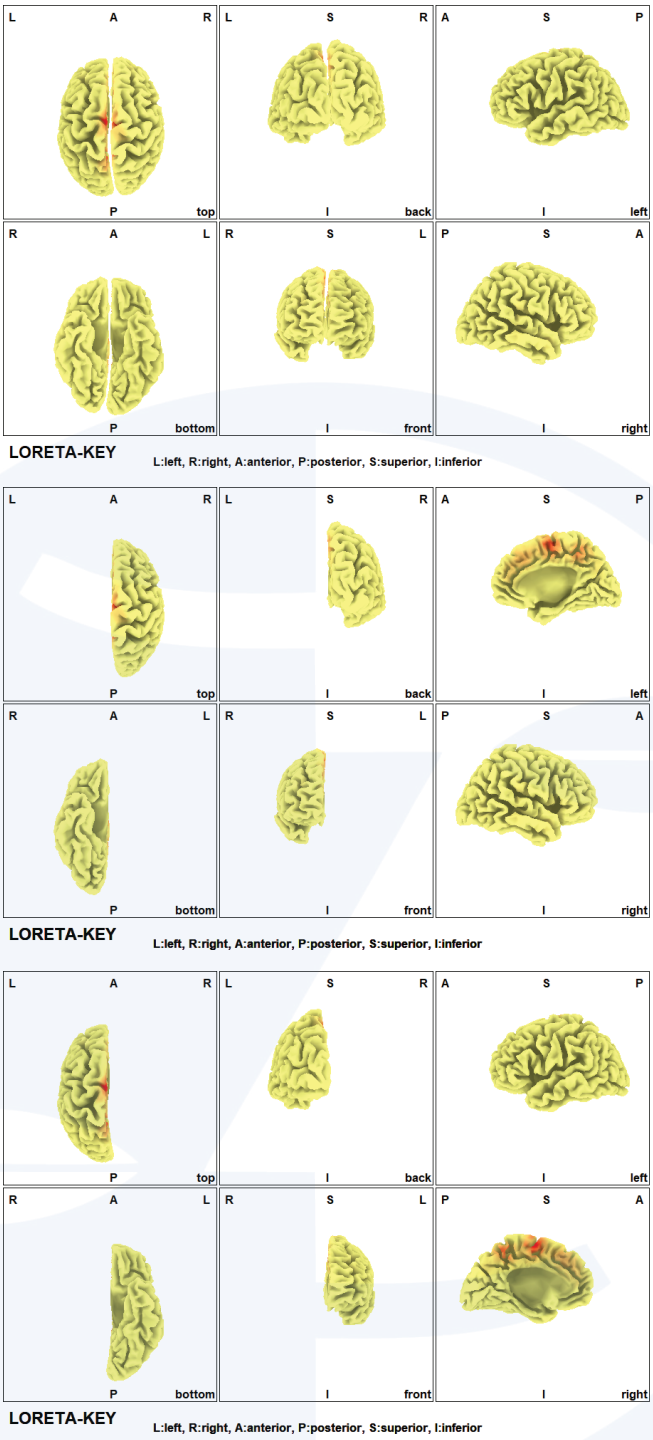

Figure 4. 3D regions of activity in the brain of the Faradarmangar population during Faradarmani Consciousness Field Connection.

DISCUSSION

According to Taheri, Faradarmani Consciousness Field is distinctive from other methods of mind-body interaction in the mechanism,purpose and consequences Its mechanism has been emphasized in the communication between CCN containing the data and information of all the components of the universe and each living and non-living component of the universe. Also, the aim of this connection is to modify and reconstruct

the mentioned components to a promoted status According to Taheri's theory, in the Faradarmani Consciousness Field connection, which is initiated by the *announcement* of the Faradarmangars and by the operation of the CCN, the human brain is like a detector and receiver that shows the manifestations of this Consciousness Field connection and mediates its function.

Similar to other methods of examining the mind-body interactions by investigating the brain electrical activity of the brain during Faradarmani Consciousness Field connection is limited to the gamma waves in areas associated with the general and default mode network brain activity. Also in this case, during this connection, the increase in the intrinsic activity of the brain in relation to its general activities (DMN), which consumes more than 90% of the brain energy (Raichle and Snyder, 2007), is significant. A gamma wave is considered to be the fastest brain activity and is responsible for cognitive functioning, learning, information processing, attention, focus, binding of senses (smell, sight, and hearing), consciousness, problem-solving, mental processing, and perception. It is also known as a biomarker of major depression and various antidepressant pharmacological and non-pharmacological therapies also affect gamma (Fitzgerald & Watson, 2018). The increasing gamma wave is a therapeutic approach in the treatment of several diseases including Alzheimer disease (Mcdermott *et al.*, 2018).

On the other hand, the two main activated brain areas of the Faradarmangar population during Faradarmani CF connection incorporated in multiple conscious experiences are in the frontal lobe (medial frontal gyrus (BA6) and paracentral lobule (BA31). First, the BA6 area is associated with many functions, mainly motor sequencing and planning movements. Participation of BA6 in memory, attention, and executive functions may be due to the activation of an extended brain network that sometimes involves this area (Catalan *et al.* 1998). Second, the BA31 area, with its main role in emotion, is obvious as well as its participation in different types of memory (e.g., topographic memory, episodic memory, etc.) (Berthoz 1997; Krause *et al.* 1999). Moreover, this area is one of the mentioned regions in the DMRSN (default mode resting-state network) (Buckner *et al.* 2008).

According to the results, although the application of Faradarmani Consciousness Field is similar to various types of mind-body interaction in terms of mind mediation and being in the present moment during the task, but the increase in gamma wave power in the frontal lobe (medial frontal gyrus (BA6) and paracentral lobule (BA31)), and the absence of low-frequency waves increase during the Faradarmani CF connection, along with proving the effectiveness of this Consciousness Field, indicate Faradarmani CF connection manifestations are different from the other known methods of meditation and mind-body interaction. Moreover, according to the method, based on establishing a connection and receiving the necessary structural and functional data and information of the organ and body from CCN, the positive relationship of this connection and the increase in the power of gamma waves and activity of the effective parts of the brains in memory, attention, perception and motor movements is observed. Further investigations on obtaining the graph of the electrical and metabolic activity of the brains during Faradarmani Connection in the Faradarmangar population in comparison with a non-Faradarmangar population are the future related studies of the authors. Also, a study on the

samples of the patients with diseases related to the activated brain regions and increased wave frequencies seen in the present study will be of special interest.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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