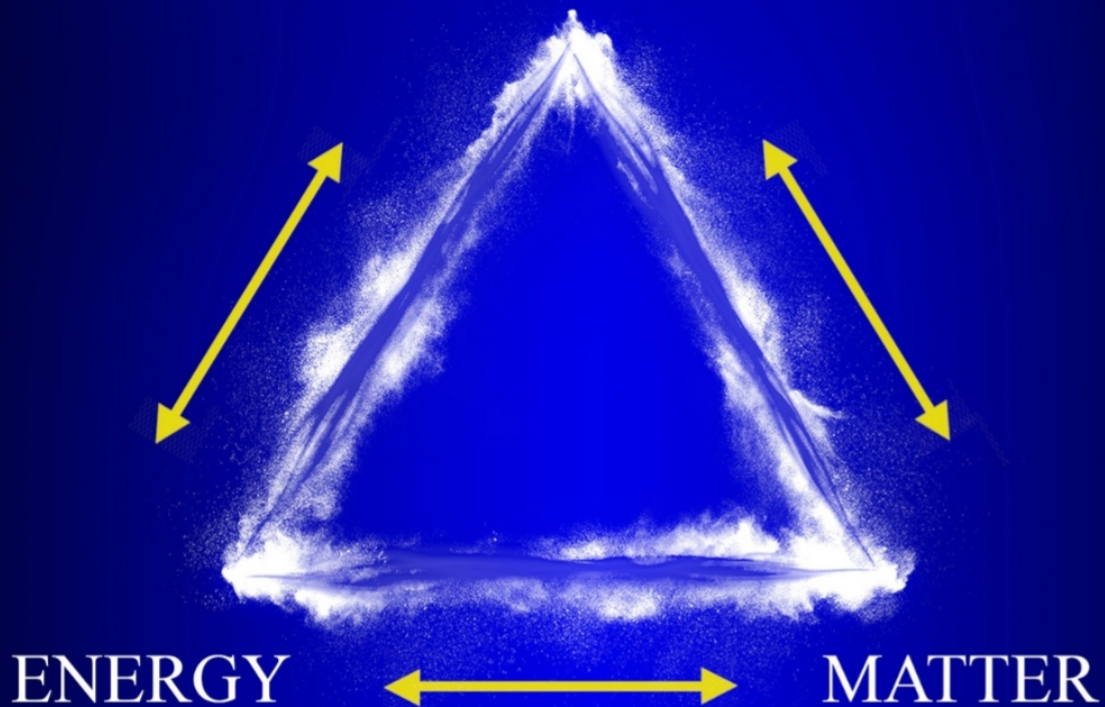


# The Scientific Journal of **CosmoIntel**

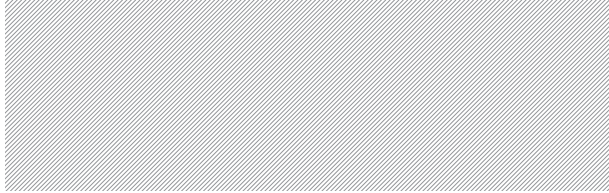
The First Scientific Journal in T-Consciousness Research

April 2022 | No.2

## T-CONSCIOUSNESS



**T-Consciousness Fields and their  
Effect on the Brain and  
Nervous System**



**The Scientific Journal of Cosmointel  
Vaughan, Canada**



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# The Scientific Journal of CosmoIntel Vaughan, Canada

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## EDITORIAL

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**MOHAMMAD ALI TAHERI**  
Founder of  
T-Consciousness Theory



[www.journalofcosmointel.com](http://www.journalofcosmointel.com)

The Journal of CosmoIntel was established in 2022. It is an open-access, multidisciplinary journal that focuses on research related to T-Consciousness. The journal is published on a rolling basis to accommodate authors and allow for the flow of the large volume of written research that has been submitted and is becoming available for publication. Journal access is free to all users; registration will be available in the future to ensure receipt of updates on the publication of issues and news. The journal focuses on **Sciencefact** research results and is published by **CosmoIntel Inc.**

The Journal of CosmoIntel publishes scholarly articles from all fields of science, engineering, medicine, and social sciences that report experiments utilizing Taheri Consciousness Fields (TCFs). Given that Sciencefact focuses on researching the effects of TCFs that are new to the scientific world, the journal is not yet peer-reviewed in the traditional sense at this time (although, the journal articles currently do undergo a rigorous review process by the CosmoIntel Committee of Scientific Researchers and Editors). It is our hope that this journal will expand far-reaching interest in the nature and function of TCFs and over time develop a broad base of trained and experienced researchers that will enable a more traditional peer-review process in the future. CosmoIntel Inc. is the main monitoring center for **Taheri Consciousness Fields** studies based exclusively on Sciencefact principles. For more information, please visit [www.cosmointel.com](http://www.cosmointel.com).

Mohammad Ali Taheri is a scholar, visionary thinker, and innovator known for his numerous theoretical concepts, including *Cosmic Consciousness Network (CCN)* and *Taheri Consciousness Fields (TCFs)* with over 40 years of history. T-Consciousness is introduced and defined as one of the constituent components of the Cosmos in addition to matter and energy, from which TCFs, as non-material/non-energetic

fields, are derived. TCFs are unique qualitative fields that are immaterial in nature but have a direct effect on matter and energy, including humans, animals, plants, microorganisms, molecules, cells, and particles. As far as the practical application of T-Consciousness is concerned, two complementary medicines of **Faradarma** and **Psymontology** have been introduced and put into practice.

In 2020, Mohammad Ali Taheri introduced Sciencefact, that utilizes science as a means to demonstrate and record the effects of TCFs. Although science studies matter and energy alone, Sciencefact and science do share a common ground which is reproducible laboratory experiments that involve matter and energy. What distinguishes Sciencefact from science is the investigation and utilization of CCN through the application of the TCFs.

Established and managed by Mohammad Ali Taheri in 2022, the Journal of Cosmointel is an all-science journal that publishes original research on TCFs. As a scientific journal, all types of scientific research that adhere to ethical guidelines and publishing standards of Cosmointel Journal and T-Consciousness research protocol are eligible for publication. Cosmointel establishes the guidelines for conducting scientific research on TCFs and publishes the results in its journal spanning various disciplines, including biology, *T-Consciousness biology*, physics, engineering, material science, medicine, and neurosciences, psychology, etc.

From Taheri's point of view, T-Consciousness is neither matter nor energy. But, rather, matter and energy both arise from "T-Consciousness" and, when necessary, they are capable of converting back to "T-Consciousness" and vice versa. T-Consciousness operates through TCFs that can alter the *Mind-of-Matter*, which has recently been proven to exist by Sciencefact experiments. The results of these experiments demonstrate that TCFs are capable of rewriting a new *Matter-Memory* [for the *Mind-of-Matter*]. Depending on the different types of TCFs, different types of *Matter-Memory* and different types of programs are formed.

According to these experiments, matter records information in itself through no physical or chemical process. This is the very first time that such a phenomenon is demonstrated in the history of consciousness.

Taheri Consciousness is composed of contrasting subsets that include *T-Consciousness* and *Anti T-Consciousness* which are being introduced for the first time in the history of this subject.

It also consists of categories and functions such as *Constant T-Consciousness* and *Variable T-Consciousness*. It is important to note that the theories of *T-Consciousness Bond*, *General Connection of Particles*, *T-Consciousness Charge*, *Communal-Mind*, and *T-Consciousness Aided Conception*, among many others that have been proposed for the very first time, have been subjected to various field research and laboratory experiments for the past several decades. Within the experience of *Communal-Mind* and *T-Consciousness Aided Conception*, the theory of *T-Consciousness Aided Information Transfer* has also been proposed.

As the above theoretical concepts elucidate, and according to the teachings of the school of **Erfan Keyhani Halqeh**, consciousness in Taheri's view (T-Consciousness) is entirely different from any and all views that, to this day, have been proposed about the concept of consciousness. Hence, it is for the purpose of differentiating between consciousness in Taheri's view and all other views presented throughout history that we call this theory by the specific term of *Taheri's Consciousness Theory (T-Consciousness)*.



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## All manuscripts must fit into at least one category of the phases outlined below:

### *The Phase-based Studies of T-Consciousness Fields in Sciencefact.*

Sciencefact<sup>11</sup> is taking an unprecedented step by introducing T-Consciousness as a non-material and non-energetic constituent of the universe that can be experienced through the application of TCFs in various areas of science. In the methodology of modern science, laboratory experiments have always been the foundation of research, and their results have served as reliable and firm criteria for accepting or rejecting hypotheses. Sciencefact, as a new field of scientific study, shares a common ground with modern science, in that it too conducts experiments on matter and energy. Therefore, with the aim of investigating and verifying the effect and the mechanism of TCFs, the following process and steps are suggested to achieve scientific findings and to design testing methods in the field of Sciencefact:

#### *Phase 0 Studies – Investigating the existence and effects of T-Consciousness Fields:*

In this phase, the aim of the study design is to investigate merely the effect (regardless of its application) on the study system in reproducible, standard laboratory experiments. The results of this phase, first and foremost, confirm the existence of TCFs in a standard and limited study. The important factor in the studies of this phase is simplicity; the elimination of multiple and diverse variables with the aim of reaching more direct conclusions and analysis to confirm the existence of TCFs. The proper experimental design with minimal variables, confirmation of reproducibility of the study results, and meticulous presentation of the designed test conditions while detailing the effects of TCFs are among the essential and distinct factors in the studies of this phase.

#### *Phase I Studies – Investigating the varied effects of different T-Consciousness Fields:*

After completing phase zero (studying TCFs and designing a standard experiment to confirm their existence) the next step of Sciencefact studies deals with the types of TCFs and the potential variety of responses in the studied system. In this stage, after having confirmed the existence of TCFs (in phase zero), researchers explain the variation in the responses as a result of exposure to TCFs, and describe the results observed in the studied system based on justifiable and repeatable scientific documentation. Stating the standard conditions of study, detailing the effects of TCFs, and providing accurate reports of the effects of various TCFs on the system under study (utilizing approved statistical tests) are among the key factors in this phase (without secondary interpretations of the mechanism of action and by focusing exclusively on what has been observed).

#### *Phase II Studies – Investigating the reason behind the [types of] effects of T-Consciousness Fields:*

This phase establishes consistency between the results of the study and the theoretical basis of Taheri's teachings that introduce TCFs and their function. While meeting the objectives of phases zero and I, the researchers present proper and accurate analysis to give an account of corresponding relations between the

1. A term coined by Mohammad Ali Taheri to introduce this new science.

basis of the reported results and the fundamentals of Taheri's teachings with clarity and according to the approved standards of Sciencefact in terms of the special topic of T-Consciousness. For example, in phase II cell studies, after having observed the proliferation of cells in the cell culture medium and presenting data confirming the existence of the TCFs, and after reporting the possible variation of the effects of TCFs, we begin to explain the results based on the principles of T-Consciousness that governs the cell inside the culture medium. Accuracy in establishing a correct and precise correspondence between the obtained results and the Source Texts of Taheri's teachings (without the researcher's personal impression) is crucial and among key factors in this phase.

### *Phase III Studies - Investigating the mechanism of T-Consciousness Fields' effects:*

The most advanced types of experiments designed in the study of TCFs are phase III experiments. In these studies, after completing the previous three stages in the preliminary phases and conducting additional and validating tests by researchers, the mechanism of the TCFs' effects on the studied system is meticulously examined. Among the prerequisites for this phase are rigorous experimental design, sufficient and well-reasoned analysis in accordance with the scientific method, and sufficient command of the principles of Taheri's teachings and the fundamentals of TCFs. In this phase, it will be possible to propose a new scientific theory based on empirical evidence.

### *Phase IV Studies –*

Drawing macro-conclusions pertaining to the mind and memory of matter, etc.

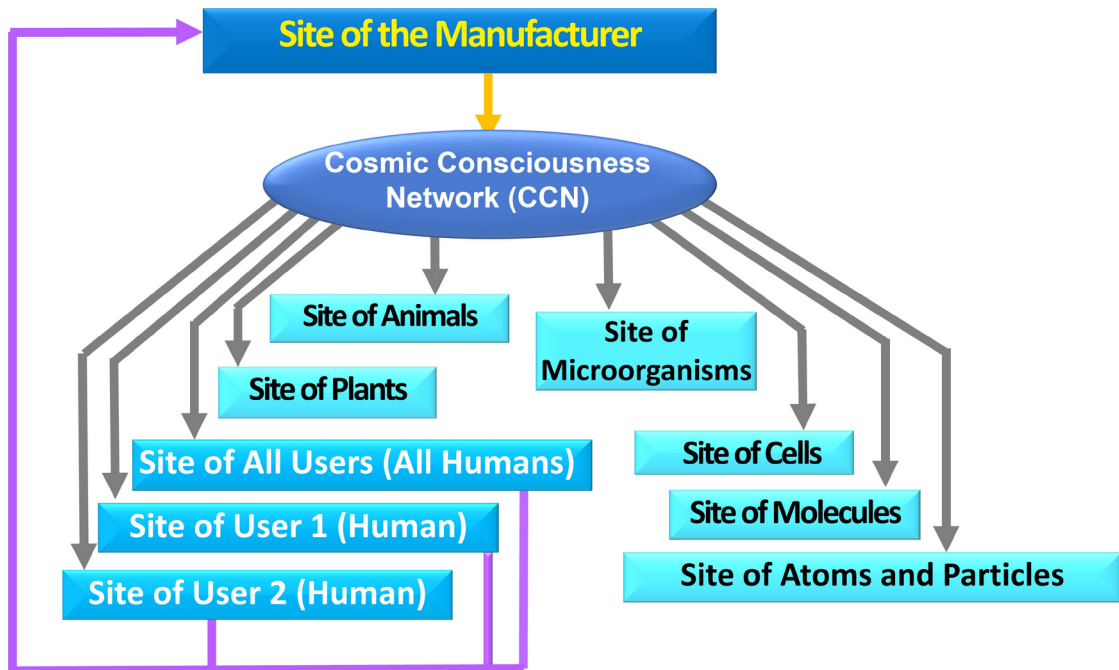


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The First Journal in  
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# Cosmic Consciousness Network (CCN) or Cosmic Internet According to Taheri



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# Faradarmani Consciousness Field Suppresses Alzheimer's Disease Development in both *in vitro* and *in vivo* Models of the Disease

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## ABSTRACT

Alzheimer's Disease (AD) is one of the most common causes of dementia, imposing large financial and psychological burdens on nations worldwide. Thus, we direly need new treatment strategies or drugs for this disease. The aim of this study is to investigate the effects of a novel non-pharmacological method in the treatment of Alzheimer's disease, based on employing Taheri Consciousness Fields. These fields function at the level of cellular and molecular processes. In this study, the effects of Faradarmani Consciousness Field (CF) on the AD mouse model (in vivo) and human neuron cell line in vitro were investigated. In this study, we established a human neuron cell culture as well as a traumatic brain injury (TBI) mouse model. We then measured changes in amyloidopathy, tau protein content, microtubule assembly, neuronal cell survival, and finally behavior of TBI mice in Elevated Plus Maze under treatment of the Faradarmani CF. According to the results, treatment of human neural cells and a mouse model of Alzheimer's disease by the Faradarmani CF leads to complete survival of neural cell models and elimination of amyloidopathy and tau protein, and remarkable behavioral improvement of the treated TBI mice model in the elevated plus-maze. Based on the results, Faradarmani CF treatment suppresses AD development in the laboratory models. In this regard, conducting a human clinical study with the aim of introducing a new global complementary and alternative medicine in AD treatment is highly recommended.

**Keywords:** Alzheimer's Disease; Faradarmani Consciousness Field; Taheri Consciousness Fields; TBI; mice model; neural cell model

## INTRODUCTION

Alzheimer's disease (AD)-related dementia is a critical public health issue in industrialized and non-industrialized nations [1]. According to the World Health Organization, AD and other forms of dementia ranked as the 7<sup>th</sup> leading cause of death in 2019, and globally 65% of deaths are women [2]. There are many diseases that lead to dementia, but AD is the most common dementing illness in the elderly, and it has been estimated that AD contributes to approximately 60-77% of cases [3]. It takes many years before symptoms of AD emerge from its onset. Therefore, preclinical studies of AD would provide a critical opportunity for developing therapeutic interventions [4]. Impaired recent memory is an initial symptom of AD and is sometimes associated with other cognitive deficits, like changes in attention and problem-solving abilities. As dementia progresses, other cognitive deficits, such as language dysfunction, visuospatial difficulty, and loss of insight, are frequently apparent [5]. In individuals, these cognitive impairments are usually accompanied by changes in personality, behavior, and uncharacteristic mood fluctuations such as agitation, impaired motivation, initiative, apathy, social withdrawal, etc. [6]. In order to manage the behavioral symptoms, psychological interventions, alternative therapies, as well as antidepressant treatments are employed [7].

Pathologically, AD is defined by the progressive accumulation of  $\beta$ -amyloid ( $A\beta$ ) plaques and neurofibrillary tangles composed of hyperphosphorylated tau protein [8, 9, 10]. Accumulation of  $A\beta$  in the brain is the primary factor driving AD pathogenesis [11]. Therefore, mechanistic clearance of  $A\beta$  peptides becomes a potential target for drug development for AD [12]. Multiple enzymes

are capable of degrading  $A\beta$  like neprilysin and insulin-degrading enzymes. Conversely, reductions in the activity of  $A\beta$ -degrading enzymes could contribute to AD itself [13,14]. The cysteine protease cathepsin B (Cat B) reduces levels of  $A\beta$  peptides, especially  $A\beta$  1-42, through proteolytic cleavage [15]. In addition, it has been reported that the peripheral system is potent in clearing brain  $A\beta$  and preventing AD pathogenesis [16]. As it was mentioned before, tau accumulation in senile plaques is another hallmark of AD. In healthy subjects, tau proteins are abundant microtubule-associated proteins that have roles in maintaining the stability of microtubules in axons [17]. Microtubules maintain the architectural support for the elongated shape of growing axons and the development of neurons [18,19]. However, tau hyperphosphorylation could lead to the detachment of tau from microtubules and lead to the formation of Neurofibrillary tangles (NFTs) [20,21]

The risk of dementia is highest in people with a history of Traumatic Brain Injury (TBI) [22]. A study found that TBI history is associated with an earlier onset of AD-related cognitive decline [23,24]. They reported that before tauopathy, cis p-tau increase in sport- and military-related TBI in humans, also reflected in mice and stressed neurons. In that study, treating TBI mice with cis antibodies prevented the development of widespread tauopathy. Thus, cis p-tau could be an early biomarker for diagnosis and therapy. In addition, the cis pT231-tau isoform was introduced as a central mediator in TBI and neurodegeneration. Therefore, targeting cis pT231-tau could be a good candidate for immunotherapy for several tauopathy disorders, including AD [25].

The loss of cholinergic function in the central nervous system contributes to cognitive decline



and dementia [26], which has been the target of anti-AD drugs [27]. Pharmacologic treatments temporarily improve symptoms but can't slow or stop the degeneration of neurons [28].

The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and scientific theories have been proposed in this area. In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri-Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. According to this theory, there are various 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 consciousness is related to the practical application of the TCFs. TCFs can be applied to all living and non-living creatures, including plants, animals, microorganisms, 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 Con-

nection 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 [29].

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 ef-

fects 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 previous investigations, we examined the effects of Faradarmani CF on the spatial memory and avoidance behavior of a rat model of AD [30]. The results showed that Faradarmani CF improved the learning and memory impairment induced by scopolamine in rats. In addition, remarkable restorative-enhancing effects were observed in their passive avoidance behavior. Changes in cancer cell growth [31], investigations on the electrical activity of the brain during Faradarmani CF Connection in Faradarmangar [32], and alleviative effects of Faradarmangar CF on the wheat plant under salt stress [33] are other observations that have been used this method. The aim of the present study was to investigate the influence of the Faradarmani CF on AD cells and animal models.

## MATERIALS AND METHODS

### *Faradarmani CF Application*

The use of Faradarmani CF (and other TCFs) is possible by registering a request through the announcement section on the website for the research center of TCF ([www.consmointel.com](http://www.consmointel.com)). For this purpose, each researcher, based on desired time and place and by introducing the generalities of the experiments, can allocate TCFs treatment for the subject of study. The Research and Development Department of the Sciencefact research center is staffed to allocate the TCFs treatments for studies under the direct supervision of Mr. Taheri, 24 hours a day, free of charge.

In this study, the FCF treatment was assigned to cellular and animal models of AD on a daily ba-

sis and for the entire duration of the experiment from the time the model was created to the ends of related assays. All executive processes and primary analyses of this study have been done by double-blind experts unfamiliar with the theory of how to use the Faradarmani CF.

### *Antibodies*

The primary antibodies were cis pT231-tau mAbs (gift from KPL, Harvard),  $\beta$ -actin mAb (Sigma, St Louis, MO), Caspase-3 (Abcam, Cambridge, MA), Tau5 (Biosource Camarillo, CA), and oligomeric tau T22 polyclonal antibodies (EMD Millipore, Billerica, MA).

### *Generating human embryonic neural progenitor cells (hESC-NPCs)*

Induced Pluripotent Stem Cells (iPSCs) from two late-onset AD patients and two healthy control age-matched subjects were donated from Royan Cell Bank, which were in turn generated from fibroblasts employing Yamanaka factors. The iPSCs were then differentiated to NPCs. The neuro-induction medium composed of DMEM/F12 medium (Gibco, 21331020) supplemented with 5% knockout serum (Gibco, 10828028), Glutamax (Gibco, 25030081), MEM-NEAA (Gibco, 11140050), 1% N2 (Gibco, 17502048), 3  $\mu$ M SB431242 (Cyman, 13031), 5  $\mu$ M Dorsomorphin (Stemgent, 04-0024), 3  $\mu$ M CHIR99021 (Stemgent, 04-0004-10), and 0.5  $\mu$ M SAG (Cayman, 912545-86-9). The rosette form structures were manually picked up after seven days of the induction. The NPCs were then re-plated on 1mg/mL laminin and 15mg/mL poly-l-ornithine-coated tissue culture dishes (Sigma-Aldrich) in the neural expansion medium included DMEM-F12 medium supplemented with 5% knockout serum replacement (KOSR), 1%



non-essential amino acid, 2 mM L-glutamine, 2% N2 (all from Invitrogen), 0.1 mM  $\beta$ -mercaptoethanol, 20 ng/ml basic fibroblast growth factor (bFGF, Royan Institute), 20 ng/ml additional epidermal growth factor (EGF, Sigma-Aldrich) and 0.2 mM ascorbic acid (Sigma-Aldrich). The medium was changed every other day for seven days. After the differentiation of neurons, the expansion medium was replaced with a differentiation medium by eliminating growth factors (bFGF) and adding hBDNF (PR-1113), hGDNF (pr-1107), and cAMP (Sigma, D0627) for 35 days. The differentiation process was tracked and confirmed with SOX2, PAX6, NESTIN, NCAM, GFAP, MAP2, GAD65, GABA, and S100 staining.

#### *Nutritional starvation stress*

We normally changed the culture medium every four days according to our differentiation protocol. However, in order to starve the cells, we didn't change the medium for additional 96 hours. We initially confirmed the tauopathy process timeline in our cell culture model and found prominent tauopathy after 96 hours of starvation; consistent with previous findings [24].

#### *Live and dead cell assay*

Fluorescein diacetate (FDA) and Propidium Iodide (PI) double staining were used for cell viability assessment. Aliquots of 20  $\mu$ l of FDA stock solution and 50  $\mu$ l of PI stock solution were diluted in 10 ml PBS [34]. The cells were initially washed with cold PBS and then the FDA/PI solution was added to the cells and was inspected by a fluorescent microscope after 5 min incubation at room temperature with the solution.

#### *Cell staining*

Cells were harvested at different time points and fixed with 4% paraformaldehyde (PFA) for 20 minutes in the dark.

They were either directly subjected to microscopic observations or stained with antibodies. In case of further processing, they were permeabilized with 0.2 % TritonX 100 for 20 minutes and stained with primary antibodies overnight at 4 °C. They were then incubated with Alexa Fluor 488 or 568 conjugated secondary antibodies for one hour at room temperature. The samples were visualized with a Zeiss confocal microscope (LSM 800).

#### *Traumatic brain injury*

The mouse TBI model was used as previously described [24]. Briefly, 18 male C57BL/6 mice (2–3 months old), obtained from Royan Animal Facility, were randomized to undergo injury or sham-injury. The mice were anaesthetized for 45 seconds using 4% isoflurane in a 70:30 mixture of air: oxygen. Anaesthetized mice were placed on a delicate task wiper (Kimwipe, Kimberly-Clark, Irving, TX) and positioned such that the head was placed directly under a hollow guide tube. The mouse's tail was grasped. A 54-gram metal bolt was used to deliver an impact to the dorsal aspect of the skull, resulting in rotational acceleration of the head through the Kimwipe. Mice underwent a single severe injury (ssTBI, 60-inch height). Sham-injured mice underwent anaesthesia but not concussive injury. All mice were recovered in room air. Anaesthesia exposure for each mouse was strictly controlled for 45 seconds. Subsequent behavioral and histopathological testing was conducted in a blinded manner.

#### *Immunohistochemistry*

Mice were perfused with 4% PFA at various time points after injury and brains were harvested for further analysis.

Serial 8  $\mu\text{m}$  coronal sections from sham and injured brains were cut on a cry-ostat (Leica) and were collected on slides.

### *Immunoblotting analysis*

Immunoblotting analysis was carried out as described [24]. Briefly, brain tissues or cultured cells were lysed in RIPA buffer (50 mM Tris-HCl, pH 7.4, 150 mM NaCl, 2 mM EDTA, 1% NP 40, 0.1% SDS, 0.5% Na-deoxycholate, 50 mM NaF) containing protease and phosphatase inhibitors and then mixed with the SDS sample buffer and loaded onto a gel after boiling. The proteins were resolved by polyacrylamide gel electrophoresis and transferred to PVDF membrane and block stained with 5% milk in TBST (10 mM Tris-HCl pH 7.6, 150 mM NaCl, 0.1% Tween 20) for 1 hour. The membrane was then incubated with primary antibodies in 5% milk in TBST overnight at 4 °C. Then, the membranes were incubated with HRP-conjugated secondary antibody in 5% milk in TBST. The signals were detected using a chemiluminescence reagent (Perkin Elmer, San Jose, CA). The membranes were washed six times with TBST after each step. Immunoblotting results were quantified using Quantity One from BioRad.

### *Immunostaining analysis*

Immunofluorescence staining of mice brains was done essentially as described [24]. After treatment with 0.3% hydrogen peroxide, slides were briefly boiled in 10 mM sodium citrate, pH 6.0, for antigen retrieval. The sections were incubated with primary antibodies overnight at 4 °C. Then, the sections were incubated with an Alexa Fluor 488 or 568 conjugated secondary antibodies (Jackson ImmunoResearch, West Grove, PA)

for one hour at room temperature. The sections were washed three times with TBS after each step. The sections were visualized with a Zeiss confocal microscope (LSM 800). The gain of the confocal laser was set at the level where there are no fluorescence signals, including autofluorescence, in sections without primary antibody but with secondary antibody.

### *Elevated plus-maze*

The elevated plus maze was used to assess anxiety two months after injury and carried out as described. In brief, the maze consists of two closed and open arms (30  $\times$  5 cm) extended out opposite each other from a central platform (decision zone). The entire apparatus is raised 100 cm above the floor. Mice were placed on the center platform of the maze, facing a closed arm, and allowed to explore the apparatus for 5 min. The maze was thoroughly cleaned between subjects with a weak ethanol solution. We tracked the total time spent in the open center (decision zone), the two closed arms, and the two open arms. The percent time spent in the open arms is presented as a surrogate measure of risk-taking behavior.

## **STATISTICAL ANALYSIS**

Experiments were repeated at least three times. We didn't exclude any animals or samples from the analysis. For all behavioral tests, experimenters were blinded to injury and treatment status. The Hitmap data was collected with Python & OpenCV. All data are presented as mean  $\pm$  standard deviation (SD) followed by a two-way analysis of variance and multiple comparisons with a 95% confidence interval, and significant p-values less than 0.05. All other analyses were carried out with GraphPad Prism version 8.



## RESULTS

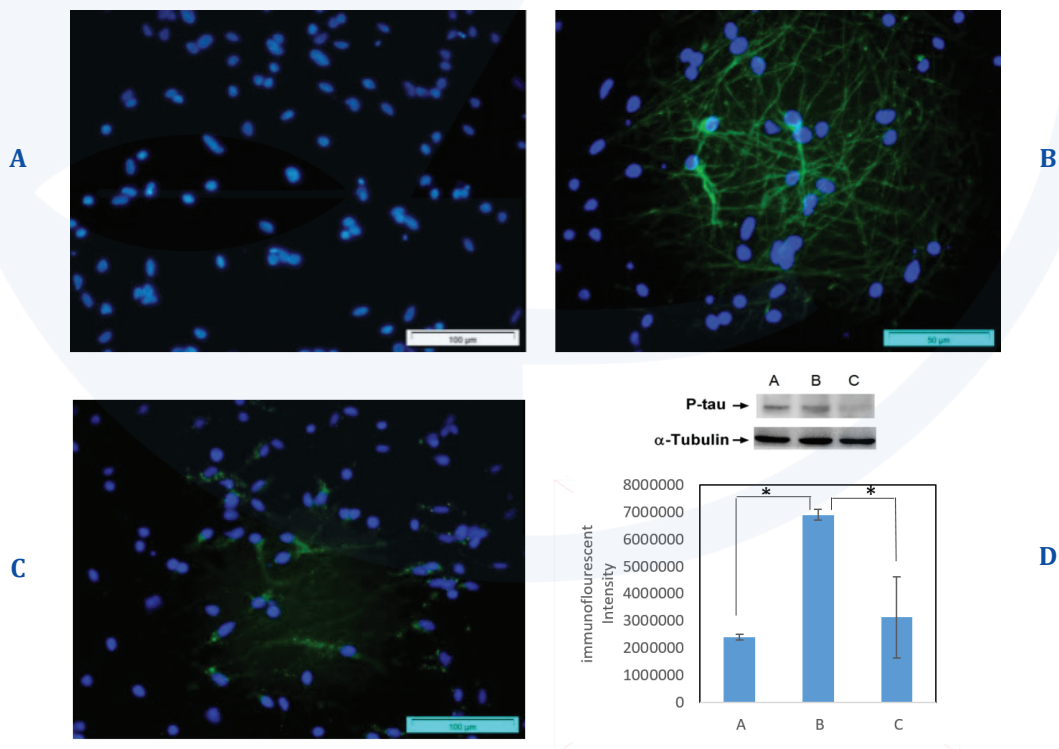
### *In vitro assessments:*

At this stage, the effect of the Faradarmani CF on tauopathy and amyloidopathy, as well as survival and accumulation of microtubules structure of neurons under the aging stress has been investigated. This part of the study was conducted in three groups: A, B and C. Group A is the control group (with no treatments), group B is a sham group (or a positive control group in which neuron cells are under aging stress without affecting the Faradarmani CF) and group C, is the sample group in which the effect of the Faradarmani CF on the parameters related to the Alzheimer's cellular model investigated in comparison with other groups.

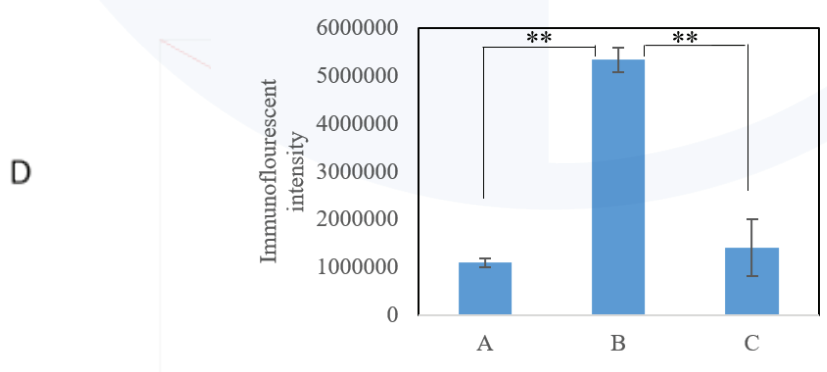
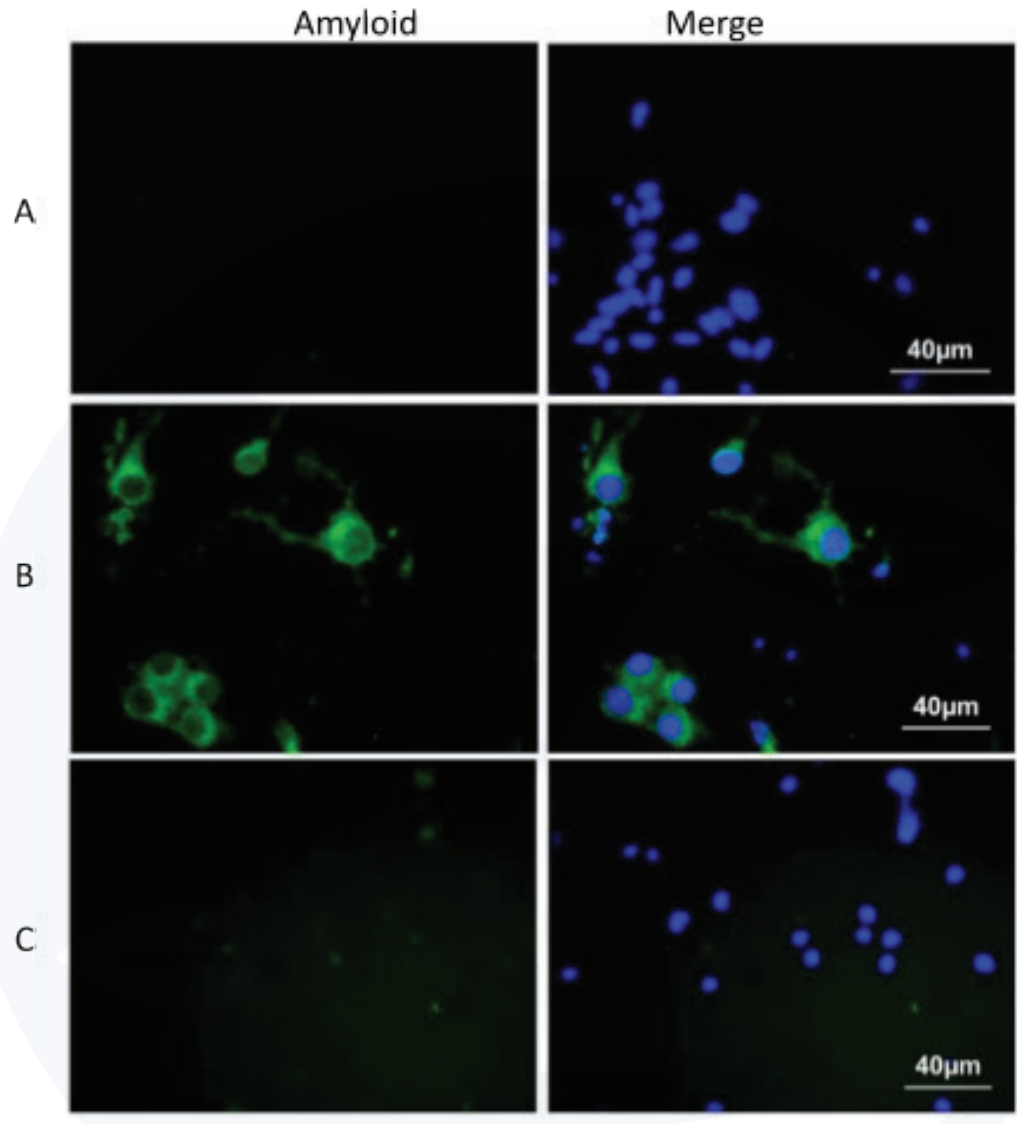
tein in three samples of the present study is shown in Figure 1. As can be seen in Figure 1, while there was a profound neurotoxic cis p-tau increase in the stressed-out culture neurons, the Faradarmani CF treatment eliminated p-tau from the cells. Moreover, as can be seen in Figure 2, aging stress-induced significant amyloidopathy in cultured neurons and Faradarmani CF treatment blocked the pathogenic process.

On the other hand, changes in the survival of neurons and structural strength of the microtubules under aging stress in different cell groups of this study are shown in Figure 3. As can be seen in this figure, Faradarmani CF treatment prominently suppressed neurodegeneration in cultured neurons upon aging stress. Also, there was a profound microtubule disruption in the stressed-out neurons, but the Faradarmani CF treatment healed the phenomena confirmed by immunofluorescence staining of the cells.

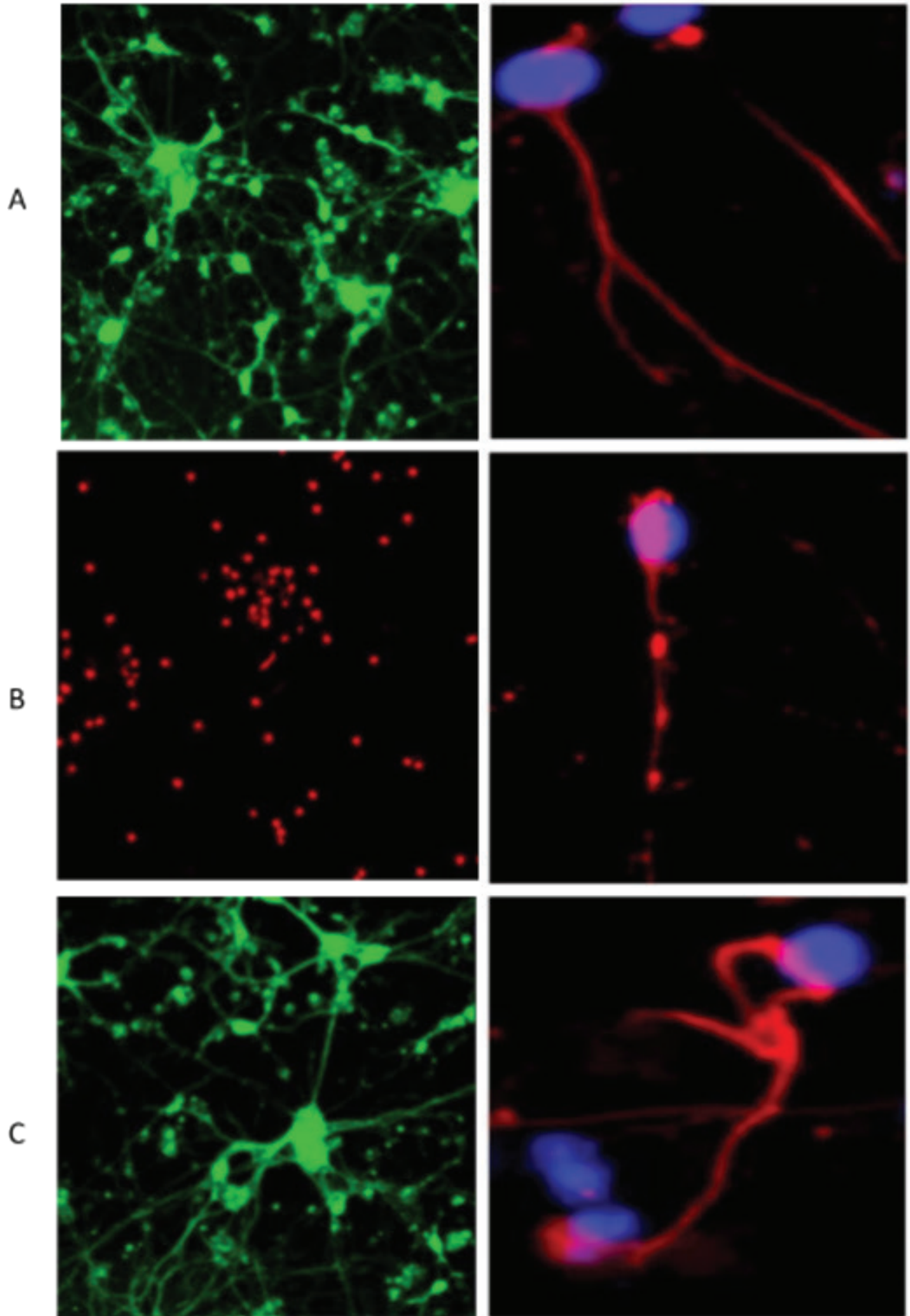
Immunofluorescent intensity of cis p-tau pro-



**Figure 1.** Immunostained cultured neurons with pathogenic p-tau under (A) Control, (B) Nutritional starved and (C) Stressed out neurons treated with Faradarmani CF. (D) Quantification representation of Immunofluorescent intensity of A, B, and C [\*; p-value < 0.001, \*\*; p-value < 0.01; difference between A and C is not significant].



**Figure 2.** Immunostained cultured neurons with anti-amyloid antibody in (A) Control, (B) nutritional starved and, (C) Faradarmani CF (FCF) treated sample. (D) Quantification representation of A, B, and C (\*\*: p-value<0.001; the difference between A and C is not significant).

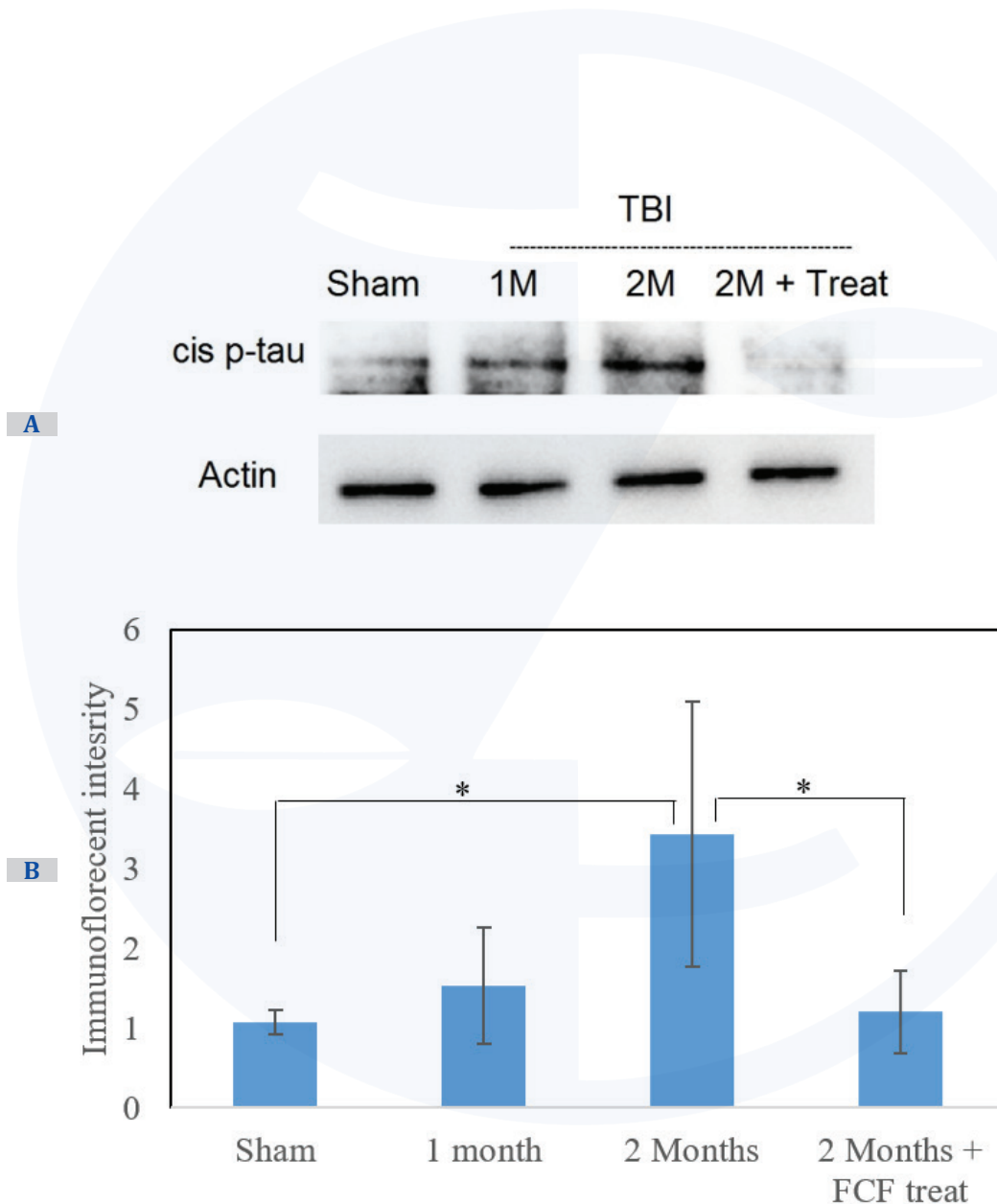


**Figure 3.** Live and dead cell assay and immunoblotting assay (Left) and Immunofluorescence staining of microtubules (Right) of stressed-out cultured neurons. (A) Control, (B) Sham and (C) Faradarmani CF (treated samples).

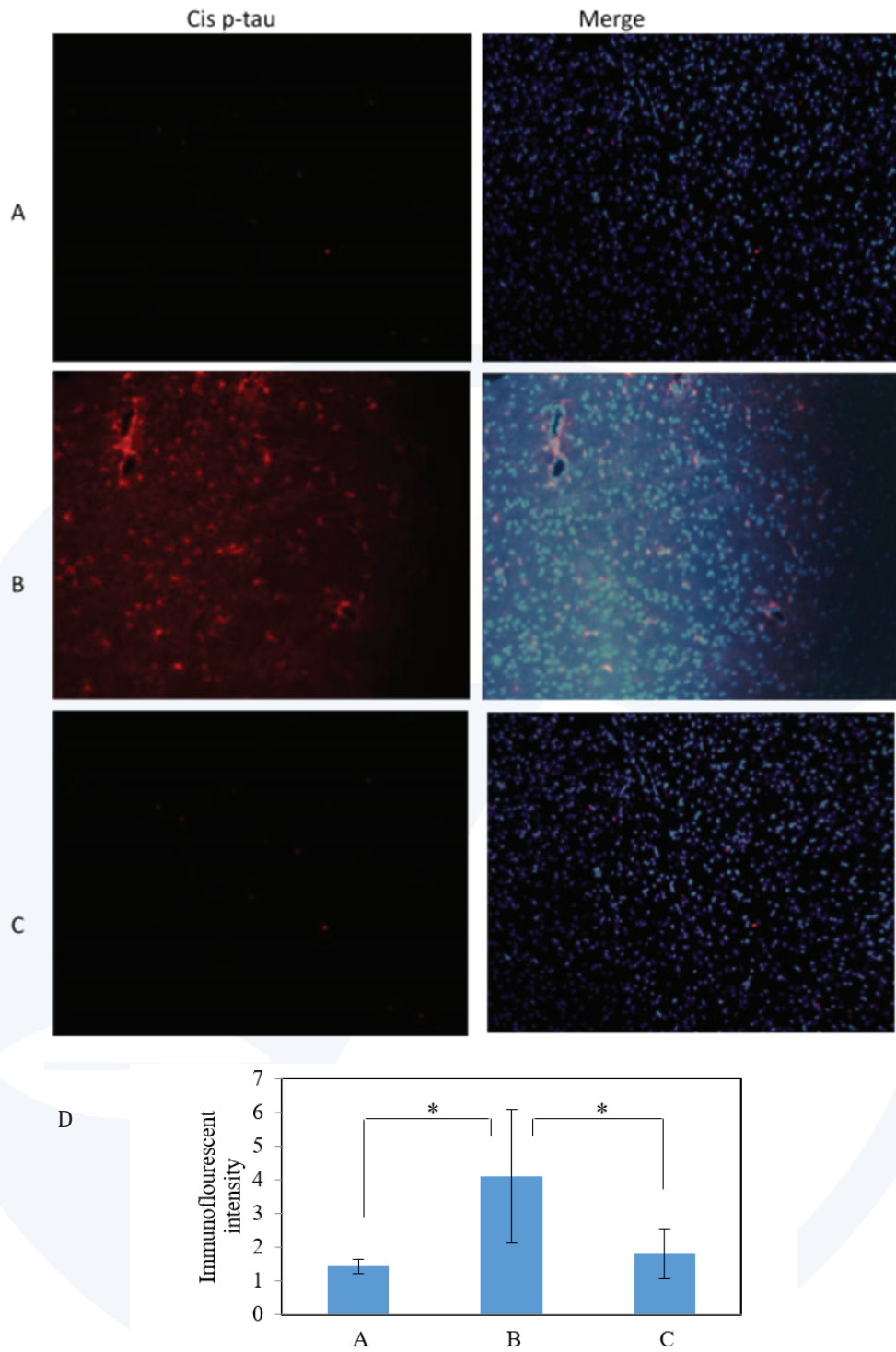
*In vivo assessments:*

In the *in vivo* assessment of mice AD models, the p-tau protein production (tauopathy) is evaluated in different samples of this study and is shown in Figures 4 and 5. As can be seen in these figures, while Traumatic Brain Injury induced prominent neurotoxic p-tau in the brain, the FCF treatment suppressed pathogenic p-tau accumulation. More-

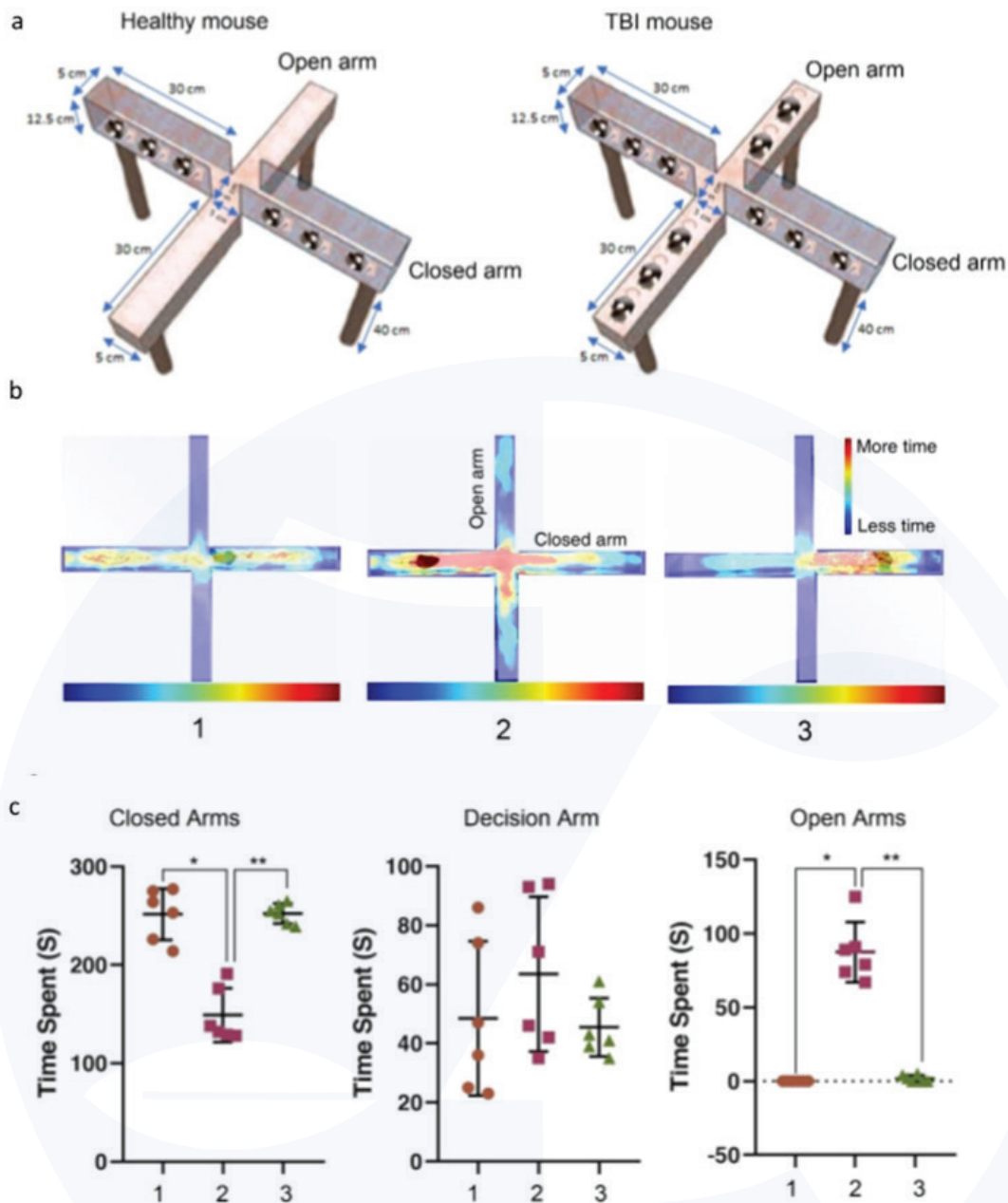
over, the use of elevated plus maze and the cognitive decline in TBI mice models have been investigated. As can be seen in Figure 6, the complete behavioral improvement in the FCF treated mice is such that even compared to the control group, they exhibit behaviors based on optimal brain function in relation to the memory, especially in the decision arm



**Figure 4.** Immunoblotting (A) and Immunofluorescent (B) analysis of mouse brains stained with p-tau antibody upon various conditions. (C) Quantification representation of A and B (\*: p-value<0.01).



**Figure 5.** Immunofluorescent stained TBI mouse brains with p-tau antibody (A) Sham, (B) TBI, (C) FCF treated TBI mouse. (D) Quantification representation of A, B, and C (\*: p-value<0.01).



**Figure 6.** Behavioral analysis of TBI mouse models with the elevated plus-maze. (A) Schematic representation of healthy and TBI mice. (b) The hit map road of the mice in the different arms of the plus-maze. (c) Quantification of mice behavior based on the time spent in the different regions of the plus maze. [1] Healthy mice (Control), [2] Mice after 2-month TBI initiation, [3] Mice after 2-month TBI initiation with the Faradarmani CF (FCF) treatment [\*: p-value <0.05, \*\*: p-value <0.001].

## DISCUSSION

This study is a continuation of assessments of Faradarmani CF on behavioral changes in AD mouse models, in addition to investigations on cell and molecular mechanisms involved in AD. The reduction in the Tau protein concentration

in AD neuronal cells under stress, their survival, stabilization of microtubules, and reduction in the amyloidopathy are distinct differences when compared with the un-treated sham groups. AD is considered one of the most expensive diseases of old age and so the development of therapeutic

interventions to ameliorate or prevent the symptoms is of great interest. A therapeutic remedy still remains far-fetched, encouraging us to test the effects of the Faradarmani CF on AD animals and cell models. The use of Faradarmani CF as proposed by Taheri, has been considered in a variety of contexts in the past decade. As the TCFs are neither matter nor energy, we cannot measure them with scientific means. However, we can measure their effects on other objects or living organisms. We observe that Faradarmani CF does affect the subjects under the study at the cellular and molecular levels in addition to the whole organisms in a reproducible fashion. An appealing advantage of using Faradarmani CF is its non-pharmacological and interventional approach to producing results. This is particularly helpful in illnesses that have no pharmacological or other therapeutic forms of treatment in living systems. Since access to the Faradarmani CF is free and accessible to any researcher, we recommend its use for the assessment of TCFs' efficacy and specificity in similar or different systems. For instance, the efficacy of Faradarmani CF in the treatment of other neurological disorders such as Parkinson's disease, multiple sclerosis, or amyotrophic lateral sclerosis can

be of particular interest.

## CONCLUSION

Overall, in this study, by investigating the effects of a novel non-pharmacological method in the treatment of AD, disease development suppresses in the laboratory models. The results indicate that Faradarmani Consciousness Field is an effective factor in biological systems, especially at the level of the nervous system, and can be used as a powerful tool in the treatment of diseases and disorders.

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## COMPETING INTERESTS

The authors declare that they have no competing interests.

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# 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  $\alpha$  and  $\beta$  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 pre-

sented 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 (Ma-son *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 mid-line 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 different 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-u-als, 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.



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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.

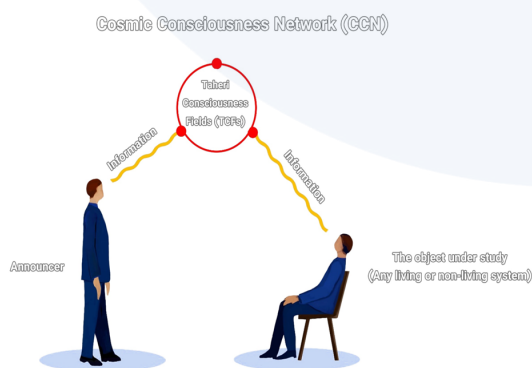


Figure 1. Announcement and Connection between the subject of study and the Cosmic Consciousness Network (CCN) through TCFs.

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](http://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 different functions, data were digitally filtered into ten frequency bands: delta (1-4 Hz), theta (4-8 Hz), al-p-ha-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, absolute and relative power and mean frequency were computed for the mentioned frequency bands. Absolute 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-level thresholds corresponded to statistically significant thresholds ( $p < 0.05$  and  $p < 0.01$ ).

## RESULTS

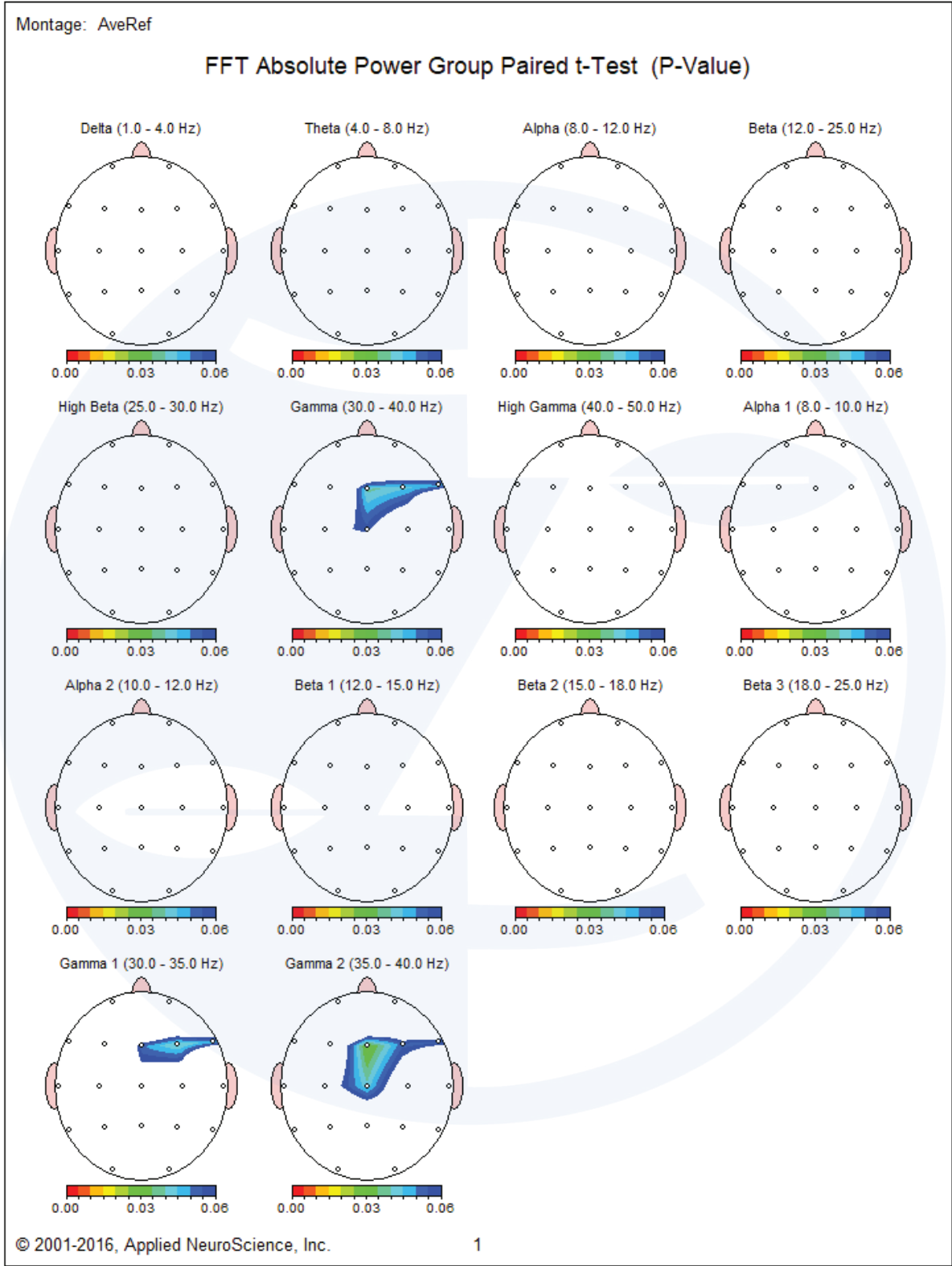
The results showed that there was a significant increase in gamma2 wave, 35-40 Hz, on front-to-central areas of the brain in task condition compared to the rest condition in this population (Fig 2)

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.

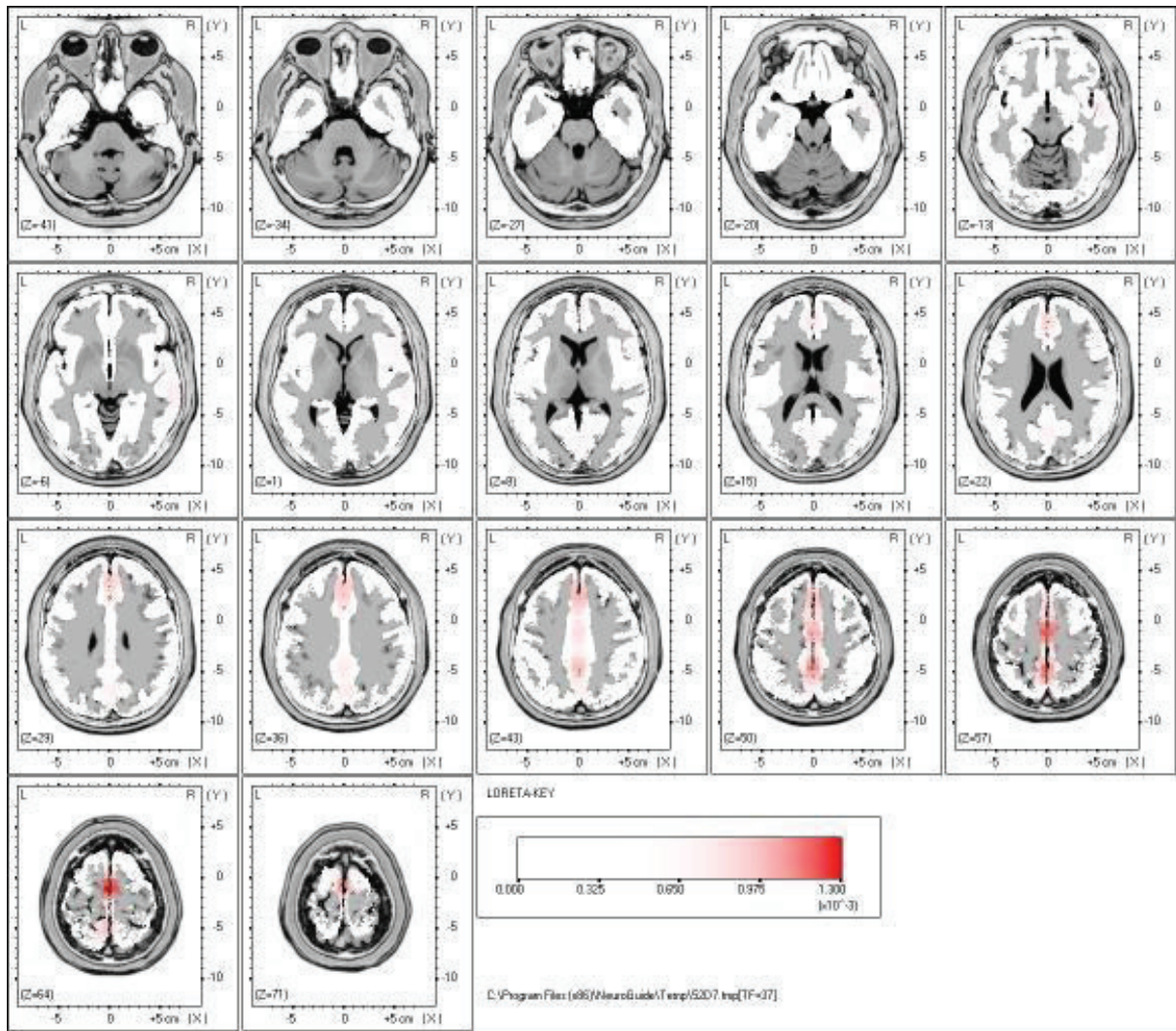
**Table 1.** Power of gamma 2 (35-40 Hz) frequency band in all 19 channels in the rest and task and their difference

Channel	Rest		Task		Diff		
	Mean/ $\mu V^2$	SD	Mean/ $\mu V^2$	SD	Mean/ $\mu V^2$	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%





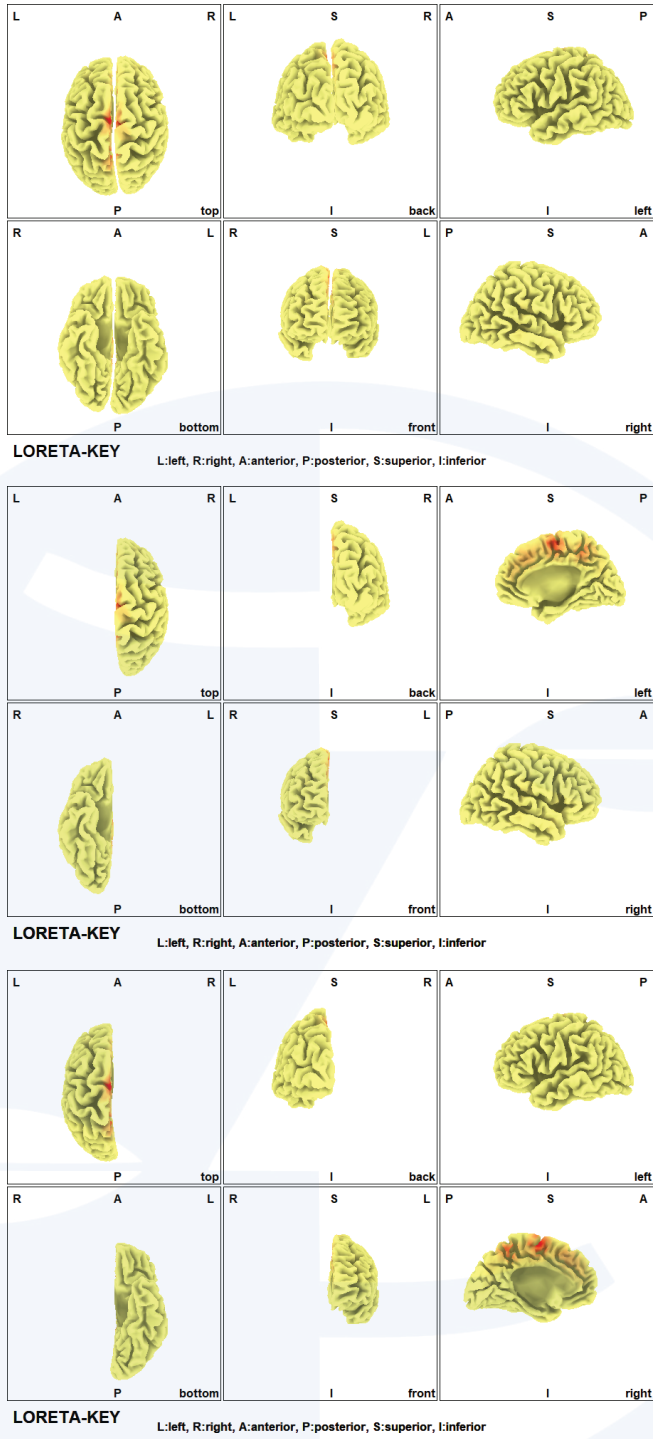
**Figure 2.** Gamma increase in tasks (Fz, F4, F8, Cz; Sig;<0.05).



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

The LORETA results indicate a significant difference in the following areas. The high-precision point is the middle frontal. This area corresponds to Brodmann District 6. Moreover, the second point is the paracentral lobule corresponding to

Brodmann 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.

nian National Brain Mapping Laboratory (NBML), Tehran, Iran, for providing data acquisition service for this research work.

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## CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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# Neural Correlation of Faradarmani Consciousness Field Mind Mediation: A Comparative Functional Connectivity and Graph analysis

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## ABSTRACT

The study of the brain networks using analysis of electroencephalography (EEG) data based on statistical dependencies (functional connectivity) and mathematical graph theory concepts are common in neuroscience and cognitive sciences for examinations of patients and healthy individuals. Taheri Consciousness Fields and their applications in the optimization of the systems under study have been investigated in various studies. In this study, we examined the results of applying the Faradarmani Consciousness Field (CF) in the Faradarmangars' brain (a certified and trained individual who has been entrusted with the TCFs). According to Taheri, the effects of Faradarmani CF are initiated through Faradarmangars' minds. For this purpose, the functional and effective connectivity, and the corresponding brain graphs of EEG from the brains of a group of Faradarmangar are compared with that of non-Faradarmangar groups during Faradarmani CF Connection. According to the results, the brain of the Faradarmangars showed a significantly decreased activity in delta [BA8], beta2 [BA4/6/8/9/10/11/32/44/47], and beta3 (in 34 of 52 BA) frequency bands, mainly in the frontal lobe and after that in parietal and temporal lobes in comparison with the non-Faradarmangars. Moreover, the frontal network's functional and effective connectivity analysis showed dominant multiple decreased connectivity, mainly in the case of the beta3 frequency band in all parts of the frontal network. On the other hand, the graph theory analysis of the Faradarmangar brain indicated an increase in the activity of the O2-T5-F4-F3-FP2-F8 areas and a significant decrease in the characteristic path length and increases in global efficiency, clustering coefficient and transitivity. In conclusion, the unique higher graph function efficiency and the reduction in the brain activity and connectivity during the Faradarmani CF mind mediation showed the human brain's passive and detector-like function in this task.

**Keywords:** brain graph; EEG; Faradarmani Consciousness Field; Taheri Consciousness Fields, functional connectivity

## INTRODUCTION

The nature of consciousness and understanding of its mechanism has been one of the most challenging topics in neuroscience and cognitive science in the last and current century. Many philosophical and scientific theories have been proposed in this area. Whether the source of consciousness is viewed to be from within the brain or as a result of events outside the brain (Chalmers, 1995), the study of brain function during various activities or in the different health and disease conditions is possible through the use of other methods.

In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri-Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. According to this theory, there are various 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 consciousness is related to the practical application of the TCFs. TCFs can be applied to all living and non-living creatures, including plants, animals, microorganisms, 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, Science-

fact 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 their 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



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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.

This study analyzed EEG data of Faradarman-gars and non-Faradarmangars, based on statistical dependencies (functional connectivity) and mathematical graph theory concepts to evaluate their brain neuronal correlation during Faradarmani CF. Various methods such as fMRI (functional magnetic resonance imaging), PET (positron emission tomography), EEG (electroencephalography), MEG (magnetoencephalography), TMS (transcranial magnetic stimulation), or a combination of these methods can reveal dimensions of brain function (Hecht and Stout, 2015), each with different strengths and weaknesses.

Among these methods, EEG has a higher temporal resolution than PET or fMRI, and resultant data can be time-locked to stimuli and responses on a millisecond scale. In this method, voltage fluctuations can be detected at the scalp; it is caused by the aggregate electrical activity of large numbers of neurons closely beneath the scalp. Moreover, oscillations filtered into different frequency bands, and the relative power of the bands can be compared for various stimuli (Hecht and Stout, 2015). In this way, the effects of various stimuli, also called tasks, can be measured with high accuracy and compared with the baseline state (rest or without stimulus).

Various analyses are performed on EEG data to obtain comprehensive information about each

activity and the related brain processes. Measurements are based on the criterion that the human brain is organized along with two fundamental principles, functional segregation, and functional integration (Friston, 2002). In the functional segregation principle, the cerebral cortex, as a non-homogeneous entity, can be subdivided into regionally distinct modules in structure (brain anatomy) and function (processing of specific stimuli). On the other hand, the functional integration principle emphasizes the concept that no brain region is by itself sufficient to perform a particular cognitive process and a dynamic interplay and exchange of information between different regions of the brain is necessary. This principle is used in functional connectivity studies that explore the temporal coincidence of spatially distant neurophysiological events (Friston, 1994) in specific stimuli with the aim of finding the related brain network.

The most recent analysis of brain connectivity criteria that explores the organization of brain network patterns is graph theory. In a graph-based analysis of the EEG signals, the stationary behavior of EEG signals is obtained and explained while they cannot be achieved by other linear analysis methods (Ismail and Karwowski, 2020). In this regard, the use of graph theory represents distinctive characteristics of healthy and diseased patients such that it provides remarkable evidence about pathophysiological processes underlying related brain disconnection (Vecchio et al., 2017).

According to the Faradarmani CF theory, the human brain can manifest the effects of such connection in the role of a powerful detector, (Taheri, 2014). The study of the electrical behavior of Faradarmangars' brains during Faradarmani Connection was performed in a previous study (Taheri et al., 2020<sup>a</sup>).

In this study, we aim to investigate the differences in the Faradarmangars' brains compared to other persons under the Fadarmani CF connection. For this, we examined the electrical behavior of the Faradarmangars' brain compared to the non-Faradarmangars' brain. The Faradarmangars' brain EEG data were analyzed based on the functional effective connectivity and graph theory to demonstrate distinctive features of the Faradarmangars' brain network during the Faradarmani CF Connection.

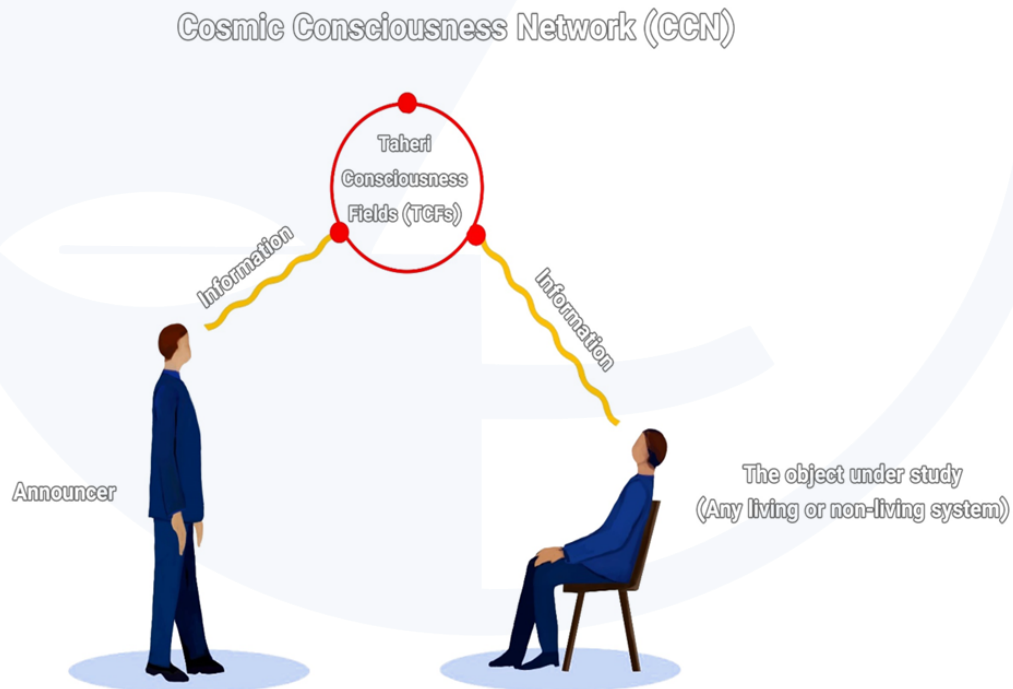
## METHODS

This study is designed to investigate and compare the effects of Faradarmani CF on EEG features

as a biomarker of brain function in two different groups. We recruited 45 Faradarmangar (33 women and 12 men, in the age range of 20-50 years,  $M = 34.5$ ,  $SD = 7.10$ ) and 15 non-Faradarmangars (11 women and 4 men, in the age range of 20-50 years,  $M = 34.3$ ,  $SD = 5.90$ ).

### *Faradarmani CF application*

In order to apply Faradarmani CF, two procedures were implemented. First, in the Faradarmangar group, each person announces the Faradarmani CF for themselves (here named the announcement process). An announcement is a process in which Taheri, or any certified announcer can declare and send the information of subjects under the study to the Cosmic Consciousness Net-



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



work by just recalling their names at the agreed time. The subject under study can be any individual willing to experience the CCN Connection. In the first procedure within the Faradarmangar group, the subject is the announcer. Second, in the non-Faradarmangar group, each person received the Connection via a Faradarmangar (figure 1). Here, the subject is non-Faradarmangar.

EEG activities were recorded by means of a 19-channel device in rest and task conditions. In the rest condition, the subjects' eyes were closed without performing any tasks. In the task condition within the Faradarmangar group, the subject was asked to start the Faradarmani Connection with its condition. On the other hand, in the task condition of the non-Faradarmangar group, a Faradarmangar states the Connection between the subject under study (a non-Faradarmangar person) and the CCN (figure 1).

*Connecting to CCN* is a process that is available to everyone 24 hours a day, anywhere in the world by following CosmoIntel's instructions. In fact, for any study or experience using the TCFs, re-researchers must register on the COSMOintel Web-site ([www.cosmointel.com](http://www.cosmointel.com)). Once registered, they can go to the researcher/connection experience section and fill out a form. In order to study or experience the Connection at any given time and place, the researchers or volunteers simply need to introduce the testing center or the person to the guidance center. It should be noted that registration on the website is necessary, and requesting an announcement is free.

### *EEG assay*

All volunteers in the present study were seated comfortably in a sound and light attenuated room.

EEG data were collected during approximately 15 minutes or more of closed-eyes task/rest by means of a 19-channel device (EEGR 19-26, Medi-com company, Russia). The data processing and analysis steps are the same as those of the aTaheri et al. (2020) study.

### *EEG-source localization analysis*

eLORETA was applied to estimate the cortical electrical activity from the surface EEG data (Pascual-Marqui, 2007; Pascual-Marqui et al., 2011). A single nearest voxel was selected for defining the ROIs from seed points. The calculation of intracranial spectral density from purified EEG was carried out by eLORETA software with a resolution of 1 to 80 Hz. eLORETA functional images of spectral density were estimated for eight frequency bands: delta (1.5-4 Hz), theta (4-8 Hz), alpha 1 (8-10 Hz), alpha 2 (10-13 Hz), beta 1 (13-21 Hz), beta 2 (21-30 Hz), beta 3 (31-40 Hz) and gamma (40-80 Hz).

The significant differences between cortical voxels and comparisons were measured by statistical nonparametric mapping (SnPM) via randomization, which determined the critical probability threshold values for the observed t-values with corrections for multiple comparisons across all voxels and frequencies. This methodological capability exists within the eLORETA software. The methodology is based on fisher's permutation test (Nichols and Holmes, 2002). A total of 5,000 permutations was used to determine the significance of each randomization test. T-level thresholds corresponded to statistically significant thresholds ( $p < 0.05$  and  $p < 0.01$ ). T-level thresholds and the correspondent  $p$  values were provided after applying the correction for multiple comparisons (Canuet et al., 2011; Imperatori et al., 2016).

## Functional and effective connectivity analysis

The whole-brain Brodmann areas (BAs) were provided by eLORETA software based on the Talairach Daemon (<http://www.talairach.org/>), which was selected for calculation of functional and effective connectivity. Lagged phase synchronization (LPS) was used as a measure of nonlinear functional connectivity.

### Graph analysis

The graph analysis was calculated by the BRAPH toolbox (Mijalkov et al., 2017). Using this toolbox, the brain atlas and the cohort of subjects, as well as connectivity matrices were defined by selecting weighted undirected graph analysis capabilities. After uploading the Talairach functional atlas in BRAPH, EEG data were imported into the software. In this way, the nodes of the network were defined. This toolbox calculates edges representing the relationship between nodes by means of weighted undirected brain connectivity. The differences between the two groups at nodal and global levels were analyzed by non-parametric permutation (=1,000) tests.

## RESULTS

We investigated the differences in the brain behavior of Faradarmangars compared to non-Faradarmangars in the present study. Considering the Faradarmangars mind mediation during communication with TCFs such as Faradarmani CF, we measured and compared the brain activity of the Faradarmangar and non-Faradarmangar groups in the task state (Faradarmani Connection). For simplification, the Faradarmangar and the non-Faradarmangar group's brain activity during the Faradarmani CF connection task is named experimental and control conditions, respectively.

### Local assay comparison

The frequency bands with decreased activity obtained from task EEG data that show the differences of the experimental and control groups and respective brain areas are shown in Table 1. As can be seen in Table 1, in the experimental group task, there is a significant decrease in activities of delta, beta 2, and beta 3

**Table 1.** Frequency bands with a significantly decreased activity show the differences between the experimental and control group's tasks and the related details (p value<0.001, threshold 1.19).

Frequency	X (MN)	Y (MN)	Z (MNI)	BA	Lobe*	Structure*
Delta	-35	20	50	8	Frontal	Middle Frontal Gyrus
	-40	20	50	8	Frontal	Middle Frontal Gyrus
	-35	25	50	8	Frontal	Middle Frontal Gyrus
Beta 2	148 coordinates in BA regions*: 10 (54), 11(62), 32(1), 4(1), 44(1), 47(3),6(7), 8(12), 9(7)				Frontal (147) Parietal (1)	Anterior Cingulate (1) Inferior Frontal Gyrus (8) Medial Frontal Gyrus (20) Middle Frontal Gyrus (45) Orbital Gyrus (6) Precentral Gyrus (11) Rectal Gyrus (4) Superior Frontal Gyrus (53)
Beta 3	2079 coordinates in BA regions*: 10 (134), 11 (228), 13 (135), 18(6), 19(59), 2(5), 20(109), 21(105), 22(89), 24(1), 25 (19), 27(2), 28(19), 32(36), 34(15), 35(13), 36(30), 37(96), 38(126), 39(29), 4(6), 40(165), 41(26), 42(19), 43(12), 44(51), 45(58), 46(43), 47(210), 5(8), 6(43), 7(1), 8(49), 9(132)				Frontal (905) Limbic, A (36) Limbic, I (1) Limbic, P (69) Limbic, P (35) Occipital (64) Parietal (179) Sub-lobar, Ext (10) Sub lobar, Ins (111) Temporal (587)	Fusiform Gyrus (86) Inferior Frontal Gyrus (1) Inferior Temporal Gyrus (75) Insula(1) Middle Temporal Gyrus(147) Sub-Gyral (11) Superior Temporal Gyrus (240) Supramarginal Gyrus (8) Transverse Temporal Gyrus (18)

\* Number in the parenthesis demonstrates the frequency of each case in all coordinates.

waves compared to the control group task. The brain regions associated with the reduced activity of these three waves (mentioned in Table 1) are shown in Figure 2.

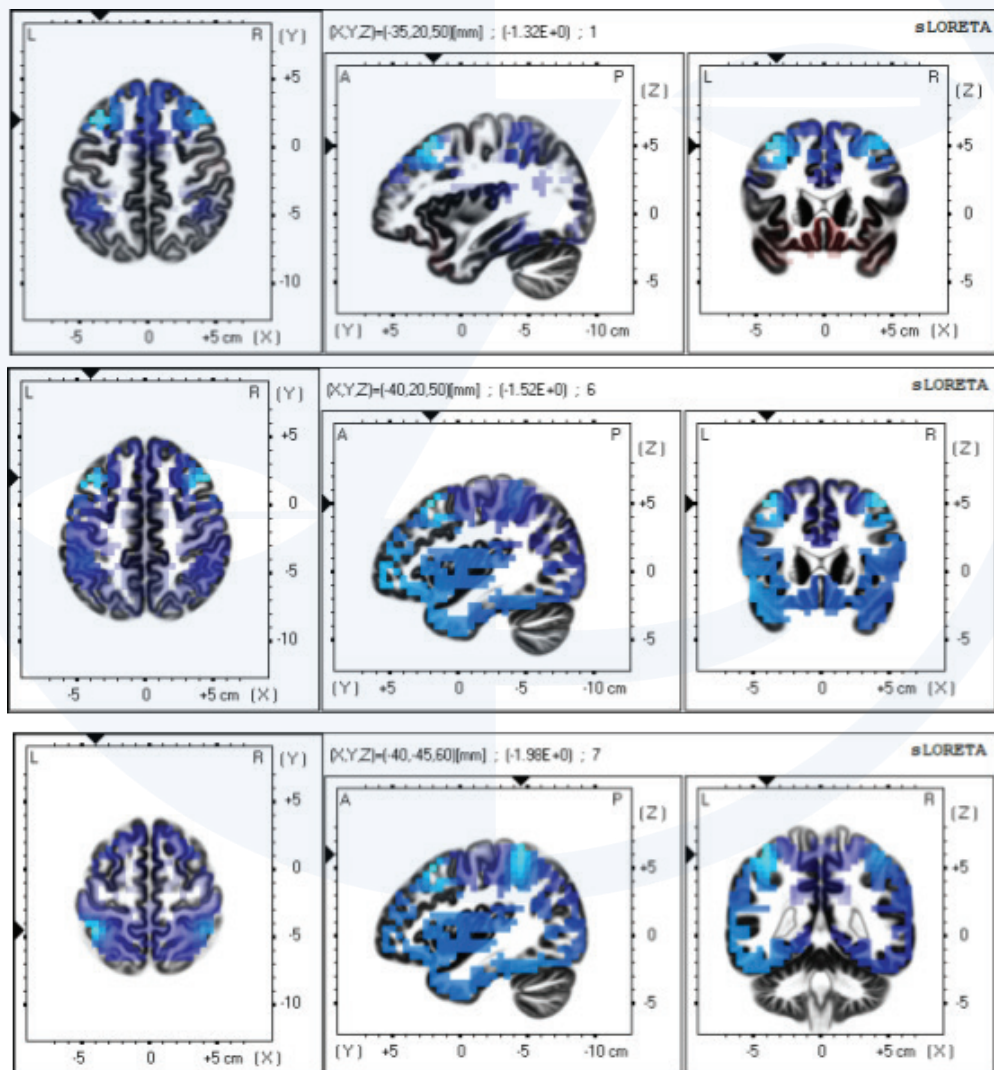
### Functional connectivity analysis

The temporal coincidence of spatially distant neurophysiological events in the brain of control and experimental groups were measured and compared based on connectivity in the frontal network of the experimental task and control task, as shown in Figure 3 and Table 2.

The connectivity differences in the delta, theta, beta1, and gamma frequency bands between the two groups of the study are not significant. Moreover, as shown in Table 2, and Figure 3, the only case of increased connectivity is the alpha 1 frequency band and the most decreased connectivity between different frontal brain regions can be seen in the case of the beta 3 frequency band.

### Effective connectivity results

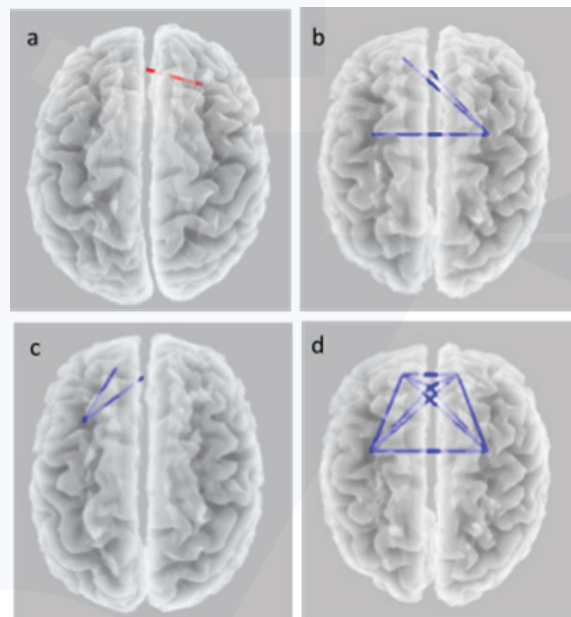
In order to determine the changes in the direction of information transfer in different parts of the frontal network in the experimental task and



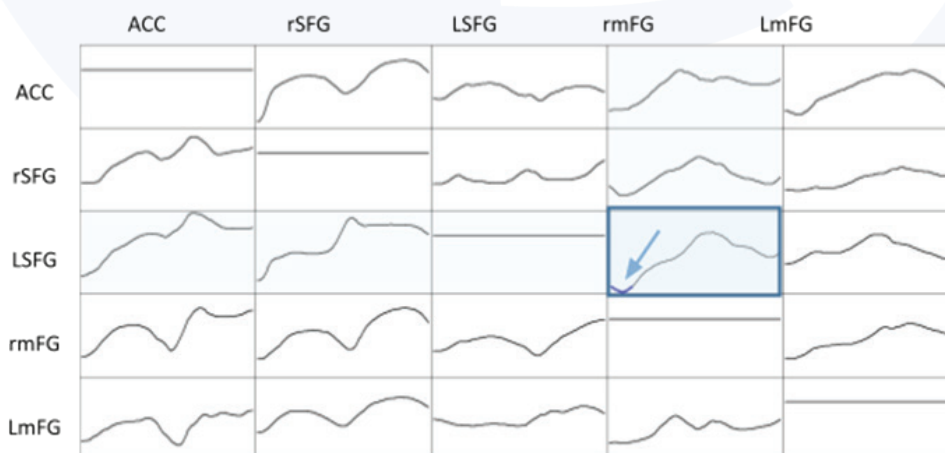
**Figure 2.** The transverse (left), sagittal (middle) and coronal (right) view of Faradarmangars' brain regions with decreased activity (in comparison with control) in (a) delta, (b) beta2 and (c) beta3 frequency bands during FCF connection.

**Table 2.** Changes in the connectivity between different regions of the frontal brain network of Faradarmangars in comparison with non Faradarmangar ( $p$ -value $<0.05$ , threshold=2.06).

Frequency band	Related regions	Change in the connectivity
Alpha1	rSFG-ACC	Increase
Alpha2	rSFG-ACC rSFG-IMFG rSFG-LSFG	Decrease
Beta 2	LSFG-ACC LSFG-LmFG	Decrease
Beta 3	All parts of the frontal network	Decrease



**Figure 3.** Increased [red] and decreased [blue] communication differences between the experimental group in comparison with control group in various regions of different frequency bands (a) alpha 1; (b) alpha 2; (c) beta 2; (d) beta 3.



**Figure 4.** The changes in the effective connectivity matrix of the frontal network in the experimental group and control group showed reduced information flow between the highlighted area in the case of the delta band [blue arrow] ( $p$ -value= 0.022, threshold=2.1).

control task groups, we examined effective connectivity, as shown in Figure 4. The results suggest that only the delta wave frequency band had a reduced information flow from rmFG to LSFG regions (between the left and right cerebrum) in the experimental group compared to the control group.

### Graph analysis

Graph analysis of the experimental group's brain activity in comparison with the control group can be seen in Table 3 and Figure 5.

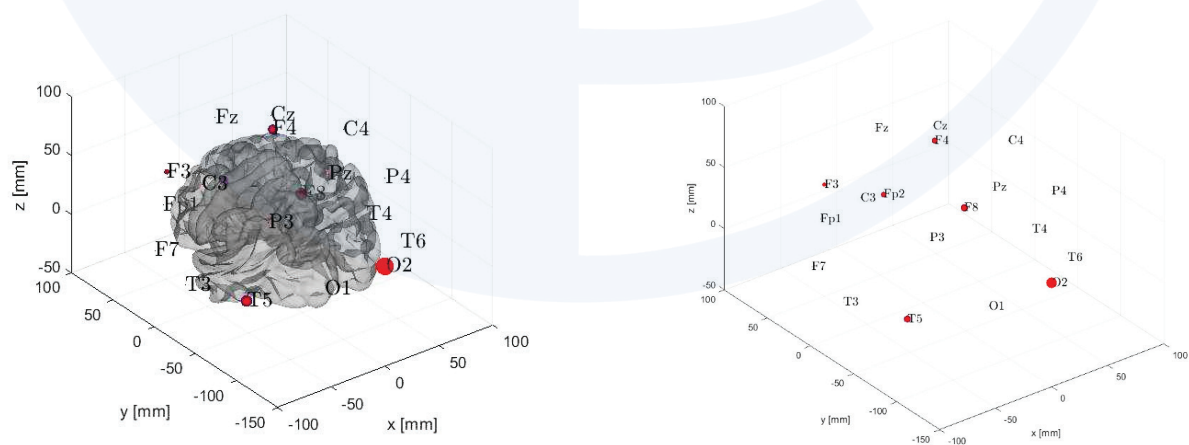
For the global network topology, results show a significant decrease in the characteristic path length and an increase in global efficiency, clustering coefficient, and transitivity in the experimental

group compared with the control. At the regional level, the nodal degree was significantly different between the two groups. The normal functional network as a small-world architecture is characterized by a high clustering coefficient (index of functional segregation) between neighboring nodes and short path length (index of functional integration) between any pair of nodes. In other words, there must be a suitable balance between local specialization and global integration.

As can be seen in Figure 5, the activity of the O2-T5-F4-F3-FP2-F8 areas in the experimental group is more than the control group. In fact, the areas in the experimental group have the most contact with their neighboring areas.

**Table 3.** The main characteristics of the Faradarmangars brain graph during Faradarmani CF connection in comparison with the control.

Measure	Experimental	Control	difference	p(1-tailed)
Char. path length	2.0854	2.3921	-0.3067	0.005
Global efficiency	0.5696	0.5092	0.0603	0.005
Local efficiency	1.4695	1.1839	0.2855	0.004
Clustering	0.518	0.4329	0.0851	0.001
Transitivity	0.7759	0.6494	0.1265	0.002



**Figure 5.** Graph analysis that indicates increased activity (in comparison with the control group) in the marked area in the experimental group.

## DISCUSSION

The study of brain activity is of great importance in consciousness research. Studies that have been done in this category to date measure brain activity during specific tasks in cognitive science, behavioral sciences, and neuroscience. Although both groups were in the Connection with CCN; the Faradarmangars group were announcers, who established the Connection for themselves; however, the control group received the Connection. The significant difference between the brain's activity of both groups represents the mind mediation role of the Faradarmangar group. Due to the functional role of the Faradarmangar's mind as a mediator in the onset of TCFs Connection, their brain's activity was compared with the brain's activity of non-Faradarmangars (as control) under the same conditions with the aim of observing possible represented differences due to the effects of this role at the brain level.

In Taheri's theory, the human brain is like a detector in relation to the Faradarmani CF, and a result of this connection is to repair the system under treatment. To begin this Connection, the presence of a person in the role of Faradarman-gar is required. Previously, in a study conducted by the authors of this article, the electrical activity of the brains of Faradarmangars has been studied (Taheri et al., 2020a). In the Taheri et al. (2020a) study, there was an increase in the gamma frequency band in the fronto-parietal and DMN regions of the brain in Faradarmangars in comparison to control. Since connection with the TCFs is possible for all humans through the Faradarman-gars, the effects were interpreted in both "subjects connected via Faradarmangar" and "Faradarman-gar as a subject".

On the other hand, what is seen in the com-

parison of the brain manifestations in connection with the Faradarmani CF between two random and larger populations than in the previous study from Faradarmangars and non-Faradarmangars, is simply the result of being a Faradarmangar in the mind mediation of the Faradarmani CF Connection. In the present study, according to the Taheri et al. (2020a) study, not only there is no increase in activity in the frequency bands and regions related to other methods of meditation and mindfulness, but also a significant decrease in the activity of delta, beta 2 and beta 3 frequency bands in the different brain regions can be seen. Moreover, in comparison with the previously mentioned study, it can be concluded that the increased activity in the gamma frequency band is the result of a Connection with the Faradarmani CF in humans, regardless of being Faradarmangar or not.

Delta waves are the slowest recorded brain waves. They are frequently found in infants and young children and are associated with the deepest levels of relaxation and restorative healing sleep (Priyanka et al., 2016). Reduction in delta waves is suggested to correspond with the conscious state of emptiness in meditation (Hinterberger et al., 2014). In contrast, beta 2 waves (mid-range beta waves:15–20 Hz) are associated with increases in energy, anxiety, and performance, and beta 3 (high beta waves:18–40 Hz) wave is associated with significant stress, anxiety, paranoia, high energy, and high arousal (Priyanka et al., 2016). The reduction of beta 2 and beta 3 frequency bands in the Faradarmangar group during the Faradarmani CF mind mediation indicates the distinction of the activated and stimulated state of the brain and a general decrease in conscious brain activity during this task.

By further investigation around this mind



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mediation role of the Faradarmangars' brain, the results of the study reveal various decreased and a single increased connectivity pattern between different regions of the brain during this task and an increase in the functional connectivity only between two regions (ACC and rSFG) in the case of alpha1 frequency band and multiple decreased functional connectivity between different regions of the frontal network in the case of alpha2 and beta 2/3 frequency bands (in all frontal network). It also shows the decreased information flow in the delta band between the left and right cerebrum and also in the frontal network, which is generally associated with cognitive and motor activities during human evolution (Leisman et al., 2016). Moreover, the brain graph analysis shows a distinct brain graph with higher global efficiency associated with the specific tasks and six node areas that can all characterize and manifest the relationship with the mind mediation role of Faradarmangars' brain during Faradarmani CF Connection.

In conclusion, by considering five out of eight

brain frequency bands as well as 39 out of 52 BA regions, our data shows a reduction in most frequency band activities and a significant reduction of connectivity in the frontal lobe. Along with these reductions and in addition to the increased graph of global efficiency, it is hypothesized that the human brain in the role of a Faradarmangar can be considered as a passive powerful detector or marker of the Faradarmani CF Connection rather than an operator or initiator. According to the results, investigation of the effect of other TCFs on the brain as well as the use of other neuroimaging techniques, including fMRI, is strongly recommended.

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# Task-fMRI Group and Functional Connectivity Analysis of the Brain During Faradarmani Consciousness Field Connection

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## ABSTRACT

Taheri Consciousness (T-Consciousness) was introduced and defined by Mohammad Ali Taheri as one of the constituent components of the Cosmos in addition to matter and energy, from which Taheri Consciousness Fields (TCFs) are derived. TCFs are not matter or energy, but they can be proven by scientific experiments. The effect of Faradarmani CF, as one TCFs, was examined in this study. Faradarmangar is a certified and trained individual who has been entrusted with the TCFs. Task fMRI has played a critical role in recognizing the specific functions of the different regions of the human brain during various cognitive activities. This study aimed to investigate the group analysis and functional connectivity in the Faradarmangars' brains during Faradarmani CF connection. Using task functional MRI (task-fMRI), we attempted the identification of different activated and deactivated brain regions during the TCFs connection. Clusters that showed significant differences in peak intensity between the task and rest groups were selected as seeds for seed-voxel analysis. Connectivity of group differences in functional connectivity analysis was determined following each activation and de-activation network. In this study, we report the fMRI-based representation of the FCF connection at the human brain level. The group analysis of the FCF connection task revealed activation of the frontal lobe (BA6/BA10/BA11). Moreover, seedbased functional connectivity analysis showed decreased connectivity within activated clusters and posterior Cingulate Gyrus (BA31). Moreover, we observed increased connectivity within deactivated clusters and the frontal lobe (BA11/BA47) during the FCF connection. Activation clusters as well as the increased and decreased connectivity between different regions of the brain during the FCF connection, firstly, validates the significant effect of FCF and secondly, indicates a distinctive pattern of connection with this non-material and non-energetic field, in the brain.

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**Keywords:** Faradarmani Consciousness Field; Taheri Consciousness Fields; functional connectivity; task fMRI

## INTRODUCTION

Researchers have tried to discover how cognitive functions are organized in the brain for more than a century. Functional Magnetic Resonance Imaging (fMRI) is a powerful non-invasive technique that has allowed researchers to peek into a living brain while it carries out specific tasks and thereby sees which parts of the brain are active as they are carried out (Delcomyn, 1998). Activation is defined as a brain region with changes in Blood-Oxygenation-Level-Dependent (BOLD) signal (Ogawa et al., 1990). In other words, activity in a specific brain area is associated with an increase in blood flow to this area, which provides the oxygen and glucose necessary for the neural activity (Vincent et al, 2009). Increasingly, fMRI is being used for investigating the dysfunction that takes place in diseases like Alzheimer's (Greicius et al., 2004, Koenig et al., 2008), Parkinson's (Moody et al, 2004, Skidmore et al, 2011), Schizophrenia (Kim et al., 2010, Walter et al., 2009) and others. In addition, fMRI is particularly suited for screening the effects of pharmacological agents on pain processing within the human central nervous system (Schweinhardt et al., 2006).

Functional activity studies have also been used to clarify the level of functional communication between brain regions. Functional connectivity is defined as the temporal dependency between spatially remote neurophysiological events (Firston, 1998, Fox and Raichle, 2007). For the first time Biswal and colleagues demonstrated that during rest-state, there were high degrees of temporal correlation both within and across the sensorimotor cortex (Biswal et al., 1997, Biswal et al., 1995). Various investigations have reported connectivity between the left and right hemispheric motor cortex during rest (Van den Heuvel et al., 2010).

The default mode network (DMN) has been identified as the brain system that is preferentially active when individuals are not focused on the external environment (Buckner et al., 2008, Raichle et al., 2001). DMN has also been involved in self-referential mental activity (Gusnard et al., 2001). Goal-directed behaviors cause lower activity in brain areas that include the medial frontal cortex, the medial and lateral parietal cortex, and limbic and paralimbic brain regions, and have been considered the default network (Pallesen et al., 2009). Among these areas, the medial prefrontal cortex (mPFC) most principally shows decreases during the goal-directed behaviors in fMRI (Gusnard et al., 2001). It has been reported that activity and connectivity of DMN are involved in the integration of cognitive and emotional processing (Greicius et al., 2003) as well as mind-wandering (Mason et al., 2007). In addition, several studies have explored the alteration within this network in cognitive dysfunction diseases, such as schizophrenia (Bluhm et al., 2007, Whitfield-Gabrieli et al., 2009, Calhoun et al., 2008) and depression (Grimm et al., 2008).

For a long time, the question of the relationship between mind-body, behavior, and specific regions of the brain has been examined by many researchers. The reductionist approach by some researchers shows that every part of the brain has some specific functional role (Delcomyn, 1998). Chen et al., 2019, provides evidence for directed information network architecture in the cerebral cortex using resting-state fMRI and suggest that features of the information flow configuration during rest underpin the cognitive ability in humans.

Numerous research projects have been conducted to explore how the mind interacts with the brain and with the major neurological chang-



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es during this interaction. For example, the brain has been extensively studied under meditation or mindfulness states, indicating that mindfulness is associated with brain activation and/ or connectivity of several regions in the brain (Marchand, 2014). According to a systematic review, mindfulness increased insular cortex activities across the seven regions. However, they failed to find any robust evidence for increased activities in the specific prefrontal cortex sub-regions studies (Young et al., 2017). Recently, a fMRI study during Transcendental Meditation practice showed that blood flow patterns were higher in anterior cingulate and dorsolateral prefrontal cortices but lower in the pons and cerebellum (Mahone et al., 2018). It has been reported that Meditation is associated with reduced activations in the DMN relative to performing active tasks in meditators compared to controls (Garrison et al., 2015). Similarly, it has been found that in several different meditations including Concentration, Loving-Kindness, Choiceless Awareness, DMN (medial prefrontal and posterior cingulate cortices) are deactivated compared to control (Brewer et al., 2011).

The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and scientific theories have been proposed in this area. In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. According to this theory, there are various 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 consciousness is related to the practical application of the TCFs. These fields can be applied to all living and non-living creatures, including plants, animals, microorganisms, 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 dif-

ferent from matter and energy.

The Argument: The existence of TCFs can be demonstrated by their 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 previous experiments, it is observed that the MCF7 cancer cell line (Taheri et al., 2020a), wheat plant under salinity stress (Torabi et al., 2021), and Alzheimer's disease rat models (Taheri et al., 2021) are significantly affected under the influence of FCF. Further details about the theory of TCFs according to Taheri and the types of experimental studies are provided in this review (Taheri et al., 2020b).

In previous research (Taheri et al., 2020c), the electrical activity of the brain during the Faradarmani connection was screened in a Faradarmangar population and it was observed that the 34-40 Hz frequency band power in the frontal

lobe was significantly increased. This increase was mainly in the medial frontal gyrus (BA6) and after that, in the paracentral lobule of the brain during the performance of the Faradarmani connection task compared to the no-task rest condition in the same Faradarmangar population. In the present study, in order to complete and further develop the previously mentioned accounts, the brain activity of a different Faradarmangar population was investigated, this time using the fMRI technique. The aim of the present study is to examine the specific behavior of the human brain while communicating with the FCF using task groups and functional connectivity analyses.

## METHODS

In the present study, we performed task-fMRI group analysis and functional connectivity analysis of a Faradarmangar population and compared their brain region activities during task performance and rest. The task is referred to the activity during which a Faradarmangar connects to the CCN. This study was approved by the ethics committee at the Iran University of Medical Sciences (approval ID IR.IUMS.REC.1399.293).

## PARTICIPANTS

The participants in this study are 20 healthy persons (men and women in equal numbers) with a history of at least 2 years of practicing as being Faradarmangar. The age range of the samples was between 20 and 50 years ( $MD=35.5\pm 9.16$ ).

## TASK DESIGN

In this study, three rest blocks (rest 1, 2, and 3)



and two task blocks (task 1 and 2) were defined, and the study began with the rest state (Figure 1). The purpose of this design, in addition to providing the conditions for observing more contrast between the task and rest modes, was to examine the changes in the brain activity in the shift from task to rest mode. The possibility of ending the connection with FCF after the initial start has not been studied experimentally. Therefore, in this study, we examined the process of disconnection modes called resets 2 and 3 between the modes of connection with FCF (task blocks 1 and 2).

The task in this study is defined as the establishment of the connection with the FCF by the participants. At the beginning of each task block, a voice played, and individuals were asked to close his/her eyes and begin this connection during their fMRI scan. The study began with a resting state (without connection to the FCF and with open eyes) and the total scan time in the task and rest states was 15 minutes per person. The rest, the blocks present a fixation point (+) for 180s. All comparisons in this study were between the task and rest states of a participant group.

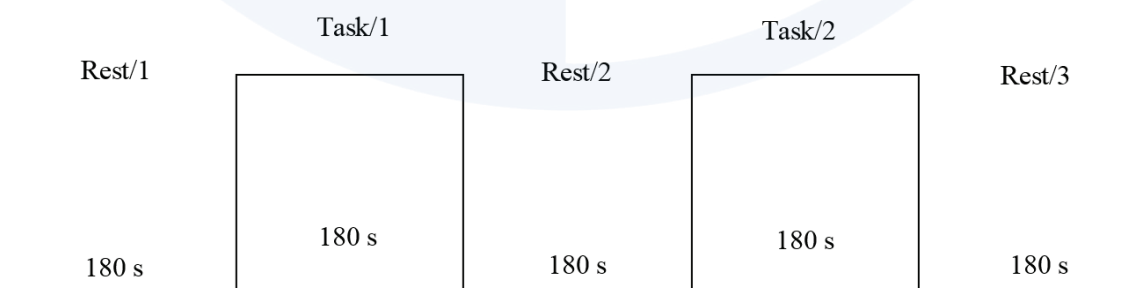
#### *fMRI Data Acquisition*

Imaging was carried out at the national brain-mapping laboratory, Tehran, Iran. Volun-

teers were laid down in the MRI system, and the head coil was used to decrease head motion and to increase the signal-to-noise (SNR) ratio. Data were acquired while applying a 3 Tesla magnetic field (Siemens, MAGNETOM Prisma) with a standard 20 channel head coil. T2x weighted, three-dimensional functional images were acquired by applying a BOLD sensitive gradient echo and echo-planar imaging (EPI) sequence with echo time (TE) of 30 ms and repetition time (TR) of 3000 ms. Through each TR, 34 axial slices were obtained at a 90° flip angle with 64x64 matrix size, 210 mm FOV, and 3x3x3mm voxel size. The functional scans contained 248 volumes per participant. With high resolution, whole-brain images were obtained from each volunteer applying a T1 weighted MPRAGE sequence (TR 1800 ms, TE 3.47 ms, 7° flip angle, 176 slices, 256x256 mm FOV, 1x1x1mm voxel size).

#### *Task fMRI analysis*

Task fMRI analysis was performed with a statistical parametric mapping software package (SPM12) (Wellcome Department of Cognitive Neurology, London, UK). The pre-processing step included field map correction, realignment, and co-registration of functional and anatomical scans, normalization, and smoothing. Moreover,



**Figure 1.** Block Task-Rest design and their duration in the present study.

Low-frequency noise was removed by applying a high-pass filter (cutoff period = 100s) to the fMRI time series at each voxel. The amount of the head motion was checked, and the threshold was considered lower than Voxel Size (3mm). Significant hemodynamic changes for each condition were examined using the general linear model with boxcar functions convoluted with a hemodynamic response function. Statistical parametric maps for each contrast of the t statistic were calculated on a voxel-by-voxel basis.

### *fMRI connectivity and Group analysis*

Data pre-processing for fMRI connectivity analysis was performed using a pre-defined pipeline of CONN toolbox (version 19. c) (Whitfield-Gabrieli and Nieto-Castanon 2012). The analysis involved the following steps: (1) estimation and correction of the participant's head movement (realignment and unwarp), (2) slice timing correction, (3) fragmentation of different brain regions (Gray/White/CSF), and normalization of data on standard MNI space. Subsequently, in the de-noising stage, fMRI signals were passed through a 100 s highpass filter to remove drift effects and respiratory and cardiac noise from the signal. In order to perform functional connectivity analysis, the peak coordinates of the activated clusters in fMRI data analysis were considered as seeds with a radius of 10 mm. Functional connectivity analysis was performed by generalized psychophysiological interaction (gPPI) (McLaren et al., 2012) in the 1st-level analysis step. The effects are reported according to the contrast for activation networks such that Task > Rest and for inactivation networks Rest>Task among all participants in the seed-to-voxel analysis mode.

In the 2nd-level analysis step, for each partici-

pant, the average gPPI model of the BOLD time series of each seed was computed from their respective functional images as the representative of the desired seed and was further correlated with the time courses of whole-brain voxels using Pearson correlation analysis.

## STATISTICAL ANALYSIS

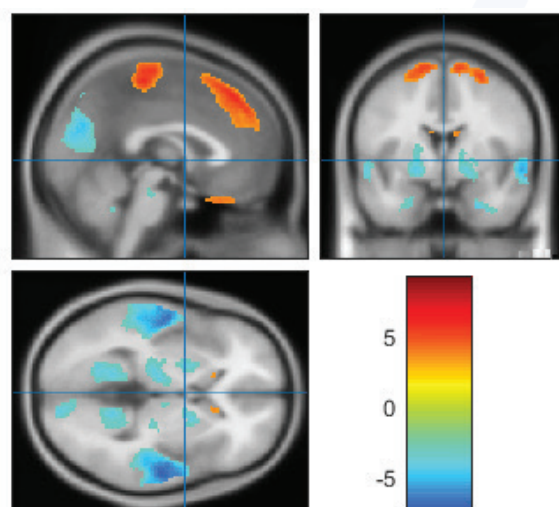
In task fMRI analysis paired T-test was used to form contrasts and the p-value was set at 0.05. In functional connectivity analysis, statistical significance for all comparisons was set at  $p < 0.05$ , FDR corrected for cluster-level (cluster threshold) and  $p < 0.001$ , uncorrected for voxel level (height threshold).

## RESULTS

### *Group analyses of task fMRI*

#### *The activated and deactivated brain regions*

The activation and deactivation of brain regions were measured during the FCF connection



**Figure 2.** Activation and deactivation of brain regions during FCF connection in the Faratherapist population of the present study [red means higher and blue means lower activity].

as shown in Figure 2. The fronto-parietal lobes of two brain hemispheres show remarkably increased activity during the FCF connection. On the other hand, the temporal and the occipital lobes of the left and right hemispheres show deactivation during the CF connection.

The 3D representation of the activated and deactivated areas of the brain during communication is shown in Figure 3.

Interestingly, there is a symmetry in the activated and deactivated areas during the FCF connection, which is also significantly different compared to the rest, as shown in Figure 3. The contrast comparison of the tasks from Reset 1 and all Reset blocks in the activation and deactivation regions is shown in Figure 4.

As can be seen in Figure 4, the different Rest considerations resulted in remarkable changes in the intensity and areas of activation and deactivation in the Faradarmangars brain. For more clarifi-

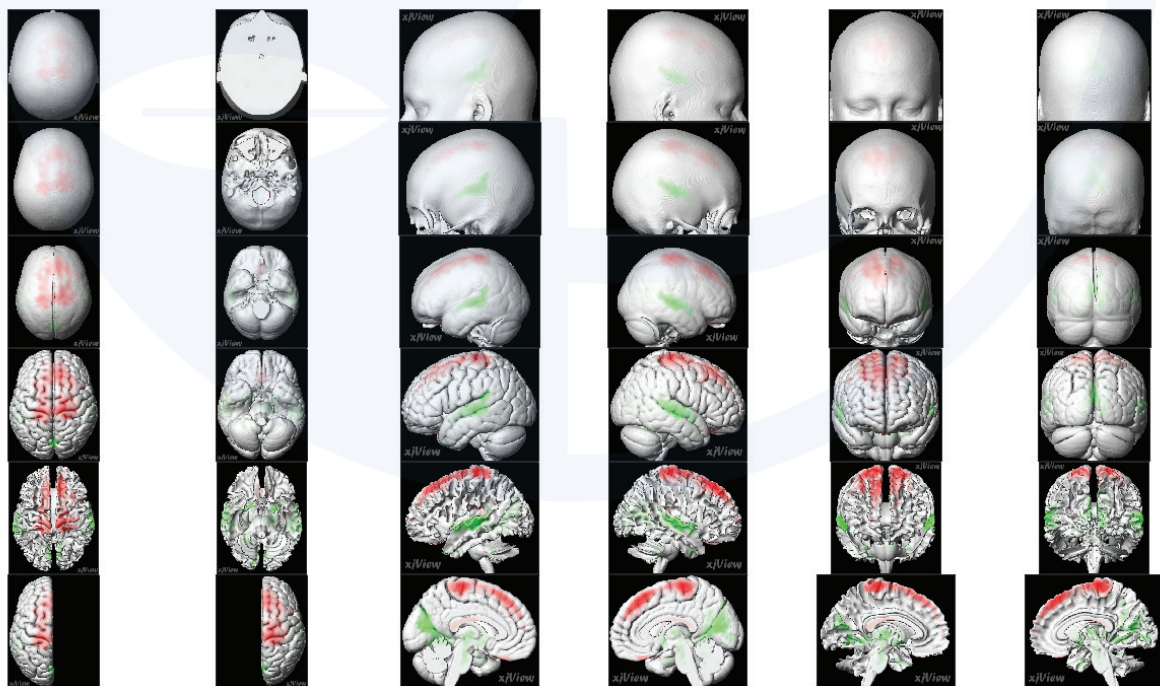
cation, the three sagittal views of (a) and (c) from Figure 4 are expanded and shown in Figure 5.

### *Activation and deactivation cluster analysis*

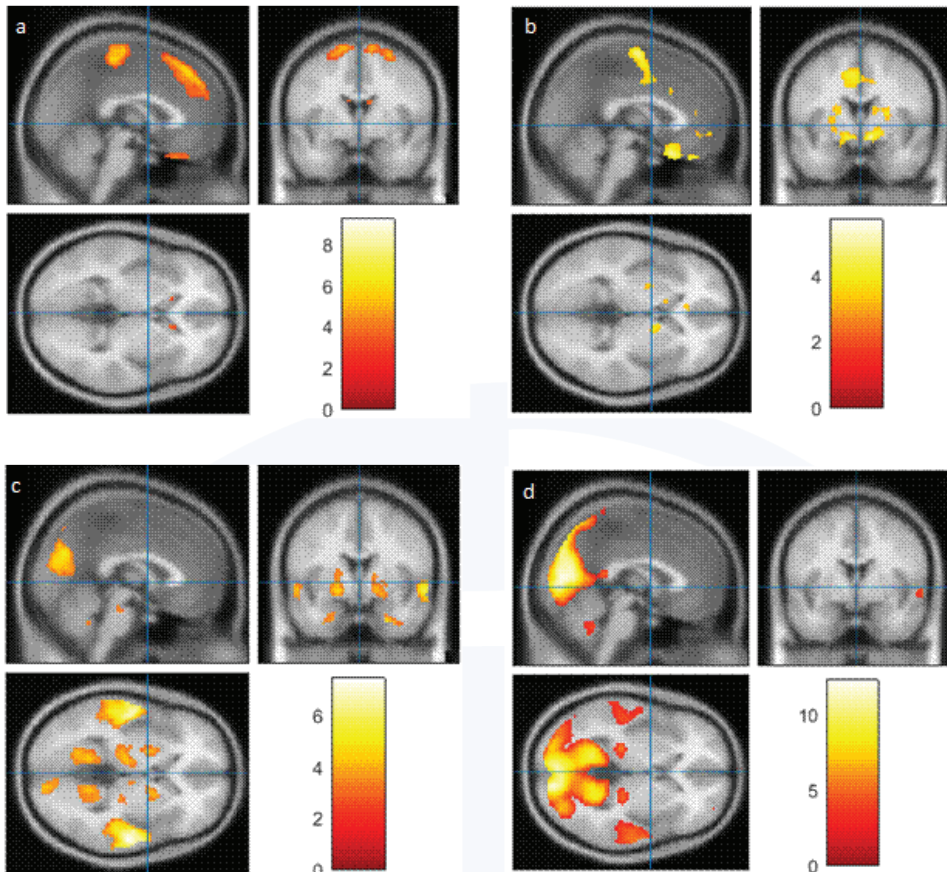
Activation and deactivation clusters measured during FCF connection are shown in Tables 1 and 2, respectively. The threshold for this analysis was set at p-value= 0.001, intensity=3.0916, and cluster size=5.

As can be seen in Table 1, the right and left frontal lobes as well as the sub lobar regions of the brain are remarkably activated during the FCF connection (more than 50 voxels). The most activated areas are observed in the Precentral Gyrus in the white matter of the right frontal lobe (BA6). Subsequently, the left and right sub-lobar regions, BA11 and BA10 are also the activated regions.

The most deactivated areas (more than one thousand voxels) in the FCF connection are shown in Table 2. The deactivation is highest in the white



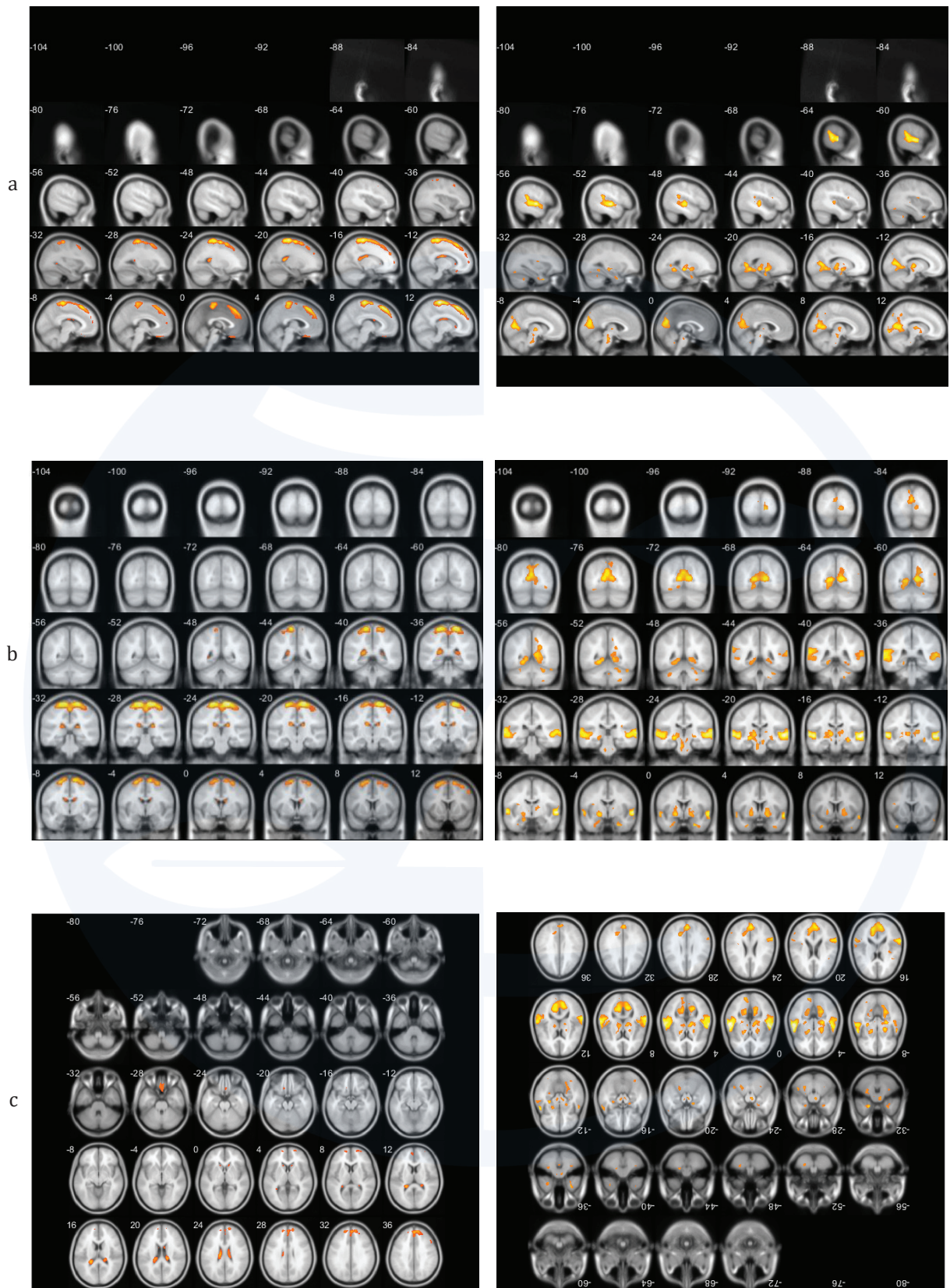
**Figure 3.** Render a 3D view of the brain of the Faradarmangar's population during the task (FCF connection) fMRI in all directions (top, bottom, sagittal and dorsal views).



**Figure 4.** Activation and deactivation areas of Faradarmangars brain during FCF connection; activation in (a) Task>Rest I and (b) and Task >Rest; deactivation in (c) Rest>Task (d) and Rest>Task.

**Table 1.** The number of voxels, peak MNI coordinate, related regions, and intensity in the activation clusters during FCF connection. The activation clusters with no. of voxels in thousand orders are highlighted in gray.

Activation clusters	Number of voxels	Peak MNI coordinate	Cerebrum	Lobe	Peak MNI region	Peak intensity
1	173	-4 34 -28	Left	Frontal	Rectal Gyrus (BA11)	4.1921
2	16	-10 24 -20	Left	Frontal	Medial Frontal Gyrus	3.6603
3	18	12 22 0	Right	Sub-lobar	Caudate_R (aal)	3.5045
4	14	-14 22 2	Left	Sub-lobar	Caudate_L (aal)	3.3306
5	6	-32 -48 2	Left	Sub-lobar	Lateral Ventricle	3.563
6	33	-16 62 6	Left	Frontal	Medial Frontal Gyrus	3.8461
7	56	20 64 6	Right	Frontal	Superior Frontal Gyrus (BA10)	3.963
8	396	-20 -38 14	Left	Sub-lobar	Lateral Ventricle	5.2362
9	225	18 -28 20	Right	Sub-lobar	Caudate	4.7855
10	8993	14 -24 72	Right	Frontal	Precentral Gyrus	9.1736



**Figure 5.** Activation (Left) and deactivation (Right) areas of Faradarmangars brain during the FCF connection in Task>Rest I and Rest>Task, respectively, in (a) sagittal, (b) coronal, and (c) transverse views.

**Table 2.** The number of voxels, peak MNI coordinate, related regions, and intensity of deactivation clusters during FCF connection. The activation clusters with no. of voxels in thousand orders are highlighted in gray.

Deactivation clusters	Number of voxels	Peak MNI coordinate	Cerebrum	Lobe	Peak MNI coordinate region	Peak intensity
1	45	28 -52 -52	Right	Cerebellum Posterior	Cerebellar Tonsil	-3.6114
2	29	20 -42 -42	Right	Cerebellum Posterior	Cerebellar Tonsil	-3.7023
3	36	-32 -48 -34	Left	Cerebellum Anterior	Culmen	-3.5606
4	121	26 0 -34	Right	Limbic	ParaHippocampal_R (aal)	-4.5244
5	1293	-24 -22 -6	Left	Sub-lobar	Optic Tract	-5.1218
6	193	32 -44 -34	Right	Cerebellum Anterior	Culmen	-3.837
7	11	2 -54 -34	Right	Cerebellum Anterior	Vermis_9 (aal)	-3.3818
8	6	10 -26 -34	Right Brainstem	undefined	Pons	-3.1819
9	43	46 -50 -28	Right	Cerebellum Anterior	Culmen	-3.8079
10	8	-28 -56 -24	Left	Cerebellum Posterior	Declive	-3.3039
11	2023	58 -18 0	Right	Temporal	Superior Temporal Gyrus	-7.3881
12	51	8 -20 -16	Right Brainstem	undefined	Midbrain	-3.7833
13	39	-32 -72 -14	Left	Occipital	Brodmann area 18 // Fusiform_L (aal)	-3.6249
14	145	30 -16 -12	Right	Sub-lobar	Hippocampus_R (aal)	-4.4384
15	4271	12 -60 10	Right	Limbic	Calcarine_R (aal)	-5.3935
16	491	18 2 -8	Right	Sub-lobar	Extra-Nuclear	-4.2654
17	2153	-54 -14 0	Left	Temporal	Superior Temporal Gyrus	-6.6313
18	15	32 -80 -10	Right	Occipital	Inferior Occipital Gyrus	-3.57
19	23	-34 -8 18	Left	Sub-lobar	Insula // Brodmann area 13	-3.6764
20	14	-44 14 18	Left	Frontal	Sub-Gyral	-3.392
21	17	56 -62 22	Right	Temporal	Superior Temporal Gyrus // Brodmann area 39	-3.4743
22	9	34 -28 22	Right	Sub-lobar	Extra-Nuclear	-3.4575

matter of the right limbic lobe in the Calcarine region, followed by the gray and white matter of the right and left temporal lobe, in the superior temporal gyrus (BA22). Finally, deactivation was also observed in the white matter of the sub lobar region of the left cerebrum in the optic tract.

## FUNCTIONAL CONNECTIVITY ANALYSIS

### *Functionally related regions in the activated areas*

The results of the seed-to-voxel analysis are

shown in Table 3. These measurements consider the peak activity points of the analyzed fMRI in Task > Rest with an uncorrected P-value <0.001.

The information on the voxels that were functionally related to the peak of the activated areas with a p-value uncorrected <0.001 is provided in Table 4.

As shown in Table 4, there is increased connectivity between activated clusters during FCF connection (Table 3) and the posterior cingulate gyrus (left BA31). The sagittal view of the functionally related clusters is detected, and its effect size is shown in Figure 6.

### Functionally related regions in the deactivated areas

The results of seed-to-voxel analysis, considering the peak activity points of the analyzed fMRI

data as seed (Table 5), in Rest1 >Task and p-value uncorrected <0.001, are as follows.

The information of the clusters and voxels that were functionally related to the peak of the deactivated areas in rest condition in comparison with task (Rest-Task contrast), with p-value uncorrected <0.001 is given in the Tables 6 and 7.

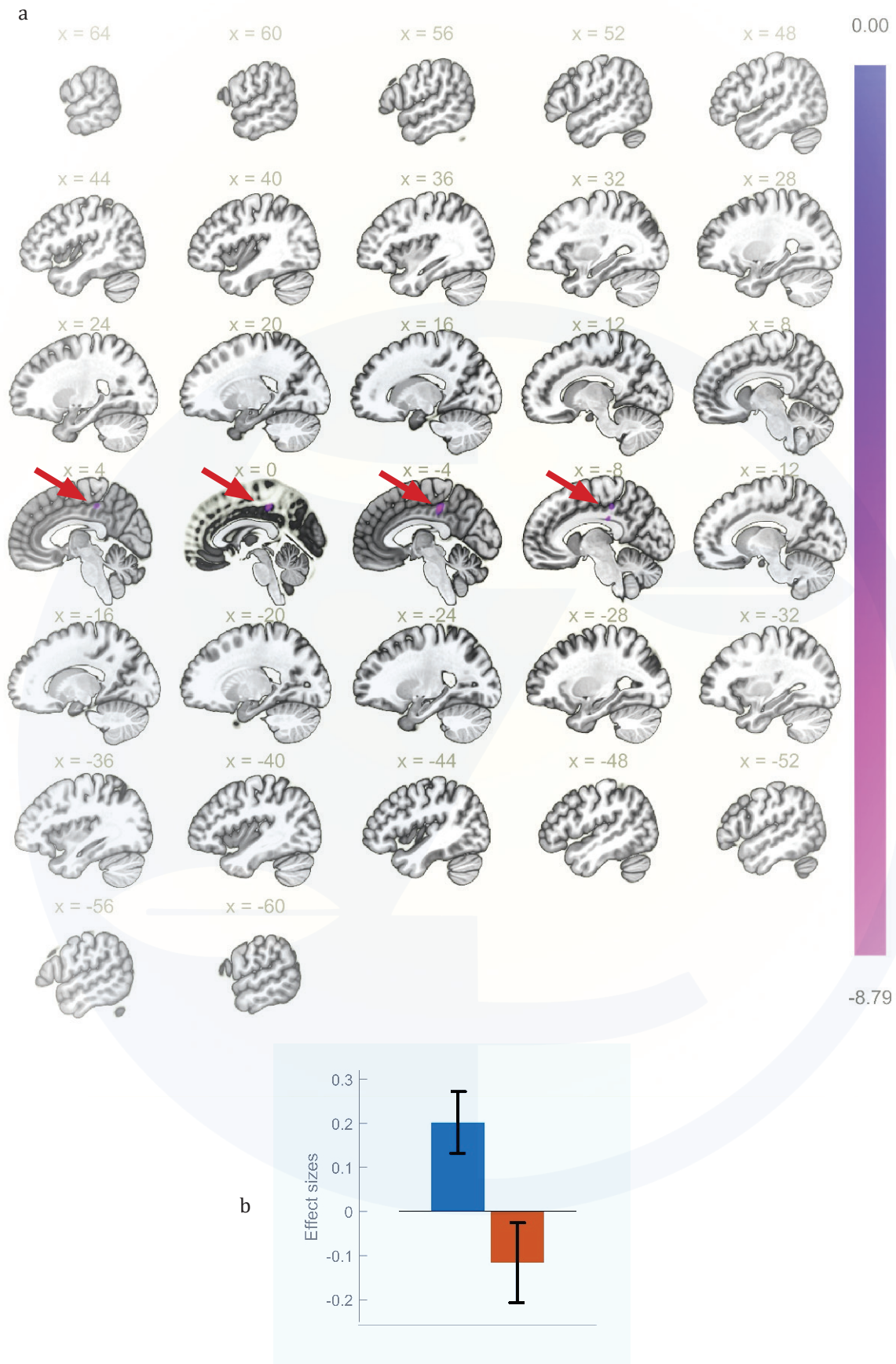
As shown in the cluster dimension of Table 6, two clusters with increased connectivity between deactivated clusters during FCF connection (Table 5), corresponds to BA47 and BA11 regions in the right frontal lobe. The sagittal view of the detected functionally related clusters and their effect size can be seen in Figures 8 and 9.

**Table 3.** Activity peak in *Task-Rest* contrast of fMRI data considering cluster threshold 50 voxels and FWE = 0.05.

#	X	Y	Z	Voxel
Cluster 1	-4	34	-28	173
Cluster 2	20	64	6	56
Cluster 3	-20	-38	14	396
Cluster 4	18	-28	20	225
Cluster 5	14	-24	72	8993

**Table 4.** Activation of functionally related clusters in the related voxels and regions.

Cluster No.	X
Dimension	x: -4 y: -30 z: +42
Cluster 5	128 voxels covering 5% of atlas.PC (Cingulate Gyrus, posterior division) 18 voxels covering 0% of atlas.PreCG I (Precentral Gyrus Left) 30 voxels covering 0% of atlas.not-labeled



**Figure 6.** The area associated with functionally related activation clusters (red arrows) from the (a) sagittal view, and (b) its effect size diagram that shows FCF connection with the red bar.

**Table 5.** Activity peak in the Rest-Task contrast of fMRI data considering cluster threshold 50 voxels and FWE = 0.05.

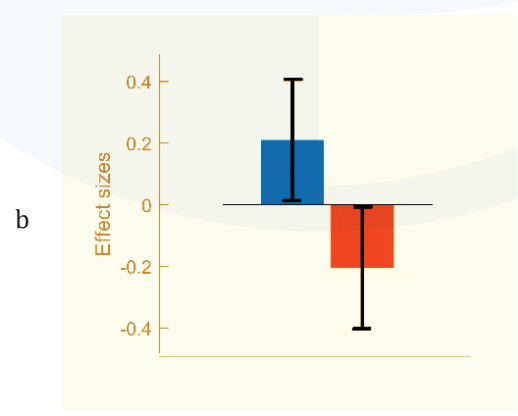
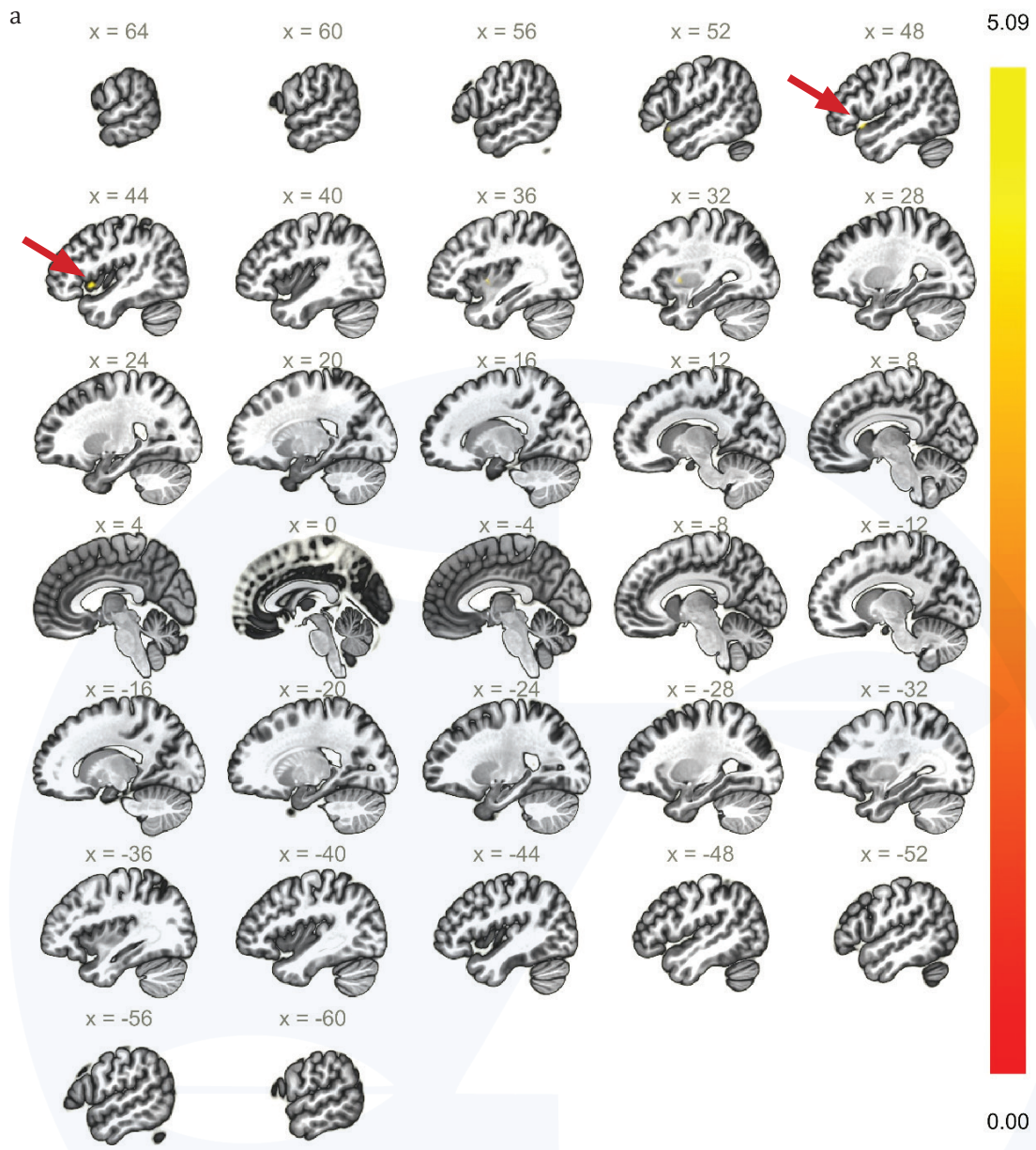
Cluster Number	X	Y	Z	# Voxel
1	26	0	-34	121
2	-24	-22	-6	1293
3	32	-44	-34	193
4	58	-18	0	2023
5	8	-20	-16	51
6	30	-16	-12	145
7	12	-60	10	4271
8	18	2	-8	491
9	-54	-14	0	2153

**Table 6.** Deactivation in the functionally related clusters.

Cluster	Cluster (x,y,z)	size	size p-FWE	size p-FDR	size p-unc	peak p-FWE	peak p-unc
1	+50 +18 -12	136	0.021966	0.032768	0.000799	0.994287	0.000090
2	+10 +60 -14	147	0.026336	0.045301	0.001105	0.998435	0.000149

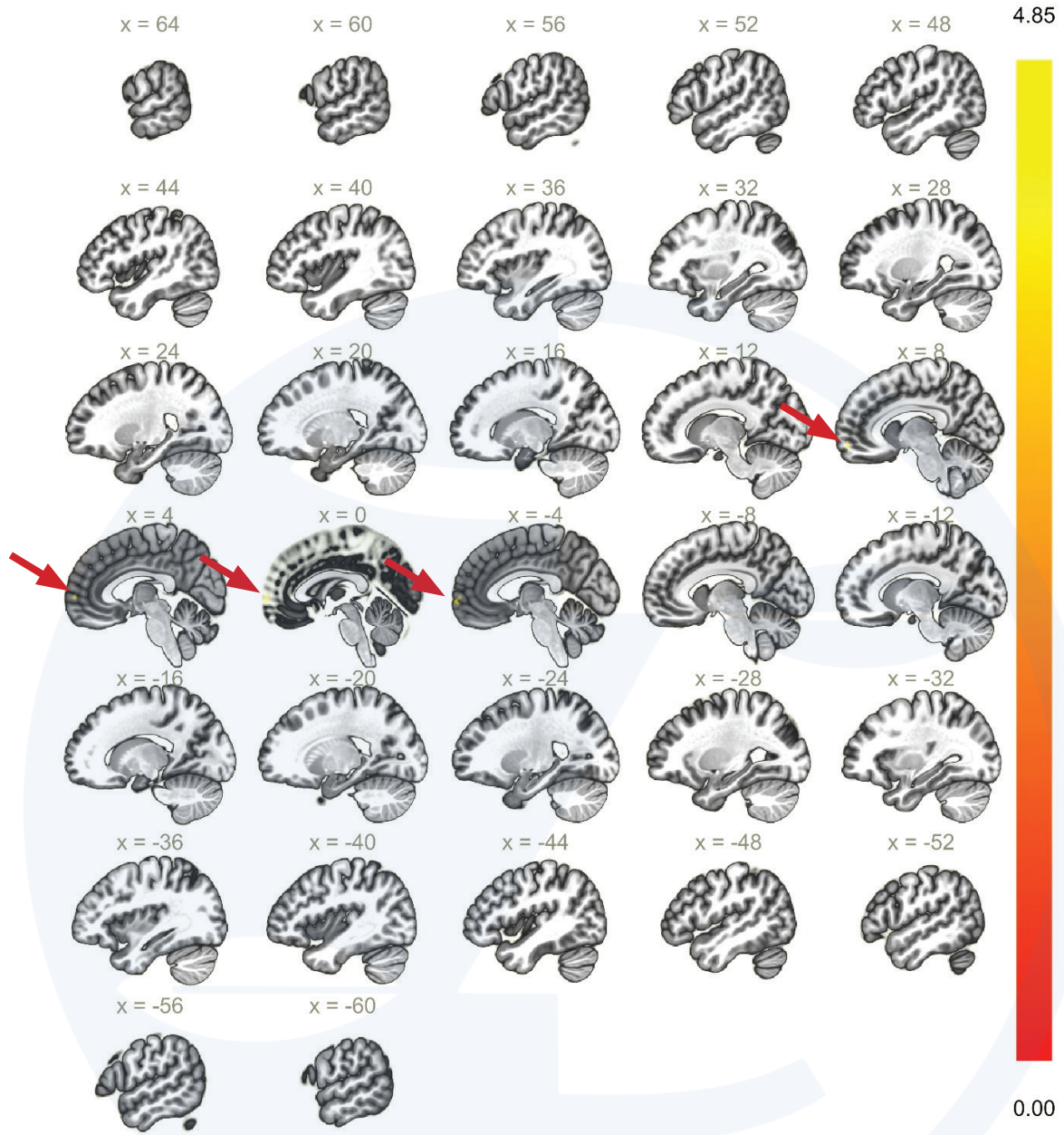
**Table 7.** Deactivation in the functionally related clusters in voxels and related regions.

Cluster	No. of Voxels	Related Regions
1	47	covering 3% of atlas.IC r (Insular Cortex Right)
	34	covering 1% of atlas.TP r (Temporal Pole Right)
	8	covering 1% of atlas.FOrb r (Frontal Orbital Cortex Right)
	4	covering 0% of atlas.Putamen r
	2	covering 1% of atlas.FO r (Frontal Operculum Cortex Right)
2	41	covering 0% of atlas.not-labeled
	-61	covering 1% of atlas.FP r (Frontal Pole Right)
	52	covering 1% of atlas.FP l (Frontal Pole Left)
	34	covering 0% of atlas. not-labeled

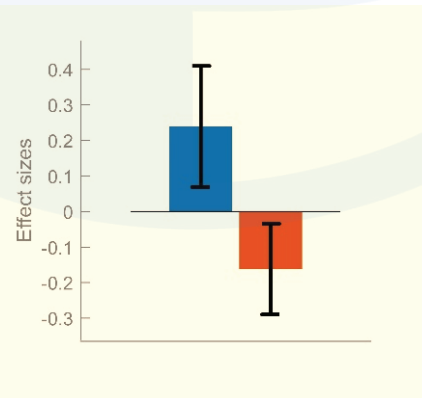


**Figure 7.** Areas associated with deactivation of functional regions in cluster I (red arrows) from the (a) sagittal view, and (b) its effect size diagram that shows FCF connection with a red bar.

a



b



**Figure 8.** Areas associated with deactivation of functional regions in cluster1 (red arrows) from the (a) sagittal view, and (b) its effect size diagram that shows FCF connection with a red bar.

## DISCUSSION

In this study, we measured the activation and deactivation of the brain regions and analyzed the results using task fMRI and functional connectivity analyses. According to the results, connection to CF leads to the activation of frontal lobe regions of the brain. These findings are in alignment with the previous studies on the examination of Faradarmangar's brain (Taheri et al., 2020) where the majority of the activity occurred in the BA6 regions. On the other hand, connection to FCF led to a decrease in the activities of calcarine limbic lobes and BA22 temporal lobes. The analyses of functional connectivity in activated and deactivated regions of the brain show that functional connectivity is increased during FCF connection within the BA31 region. Conversely, upon disconnection from FCF, functional connectivity is increased in the BA11/47 region instead.

Similar to the previous findings (Taheri et al., 2020), the electrical activities of the brain are activated in the frontal lobes upon connection to FCF. The distinguishing characteristic of the frontal lobe is its property as a traffic hub within the nervous system that connects to other regions of the brain and vice versa (Baars and Fage, 2013). In our study, the BA6 region within the frontal lobe shows the highest activity during FCF connection. The BA6 region is the biggest part of the Brodmann region and is commonly referred to as the premotor cortex which plays a role in motor sequencing and planning movements (Catalan et al., 1998). Even though many functions are attributed to this region, playing a role in cognitive functioning is among them (Tanaka et al., 2005). Other roles suggested for the BA6 region include memory (Ranganath et al., 2003) and attention (Nobre et al., 1997).

After BA6, the BA10/11 part of the frontal lobe is the next region that is highly activated. BA10/11 is also a part of the prefrontal cortex (PFC) and is located in the frontal region of the frontal lobe. This region is developed in one of the final time-points during evolution and constitutes more than 1/4th of the cortex (Fuster, 2009). The functions attributed to BA10 involve memory encoding (Ranganath et al., 2003), memory retrieval (Tulving et al., 1994), and working memory (Zhang et al., 2003). It is also reported to play a role in personality integrity (Ciorciari et al., 2019). To date, there have not been many examinations on the style of reacting and correlations of this region with personality due to the difficulty of studying the association between these regions when using fMRI tests.

The reduction in functional connectivity between BA10/11 and BA31 is one of the intriguing findings in this study. As suggested in DMN literature, the default network hubs are commonly between mFPC and the PCC cortex (Buckner et al., 2008). The observed decrease may be due to the absence of correlation between the activated regions and the default network. It also rejects the possible synchronicity and connection between the default network and brain activity during FCF connection.

In this study, we also observe deactivated brain regions during connection with FCF. The limbic brain region, located on the left and right medial sides of the brain, is the most primitive part of the brain and is shared with other mammals, reptiles, amphibians, and fish. The main functions of this region are the regulation of emotions, sexual responses, and homeostasis in humans (Michael et al., 2010). The decreases in the limbic regions during FCF connection are within the calcarine parts



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which house the primary visual cortex (Johns, 2014). Additionally, the optical tracts located within the lobes in the left cortex show reduced activity under connection with FCF. This decrease is concomitant within the BA22 regions which is the same as the auditory association cortex (Mirz et al., 1999).

This decrease in activity in the visual and auditory areas of the brain is related to the opening of the eyes in the rest mode and the voice message heard at the end of it and entering the task mode. On the other hand, the increase in functional connectivity is observed within the deactivated regions and parts of PFC (BA47/11) which in the case of BA11, there is a correlation with part of the activated areas of the brain. This result clearly indicates a change in brain activity between the state associated with the FCF and disconnection from it, as a result of the task and rest designed in the present study.

As a whole, we can summarize our findings in four parts: (1) FCF connection has a distinct characteristic effect on the human brain, (2) FCF leads to the activation of the human brain regions and

changes various brain connectivity networks, (3) the activated parts of the brain are mostly associated with the more advanced brain frontal lobe regions and functional connectivity is activated opposite to the default networks (due to reductions in BA31 hub), and (4) the correlation between the deactivated and activated regions suggest a switch in Faradarmangar's brain during FCF connection, especially within the BA11 region.

Examining the other brain regions and comparing the various regional activities in larger and more diverse study populations can help shed light on the significance of FCF connection and its effects findings. Additionally, investigating the effects of FCF on brain functions in neurological diseases are the future considerations of the authors of this study.

## ACKNOWLEDGEMENT

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# An Investigation of the Effect of Faradarmani Consciousness Field on Heart Rate Variability Parameters

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## ABSTRACT

The Faradarmani Consciousness Field (CF), a complementary and alternative medicine (CAM), introduced by Mohammad Ali Taheri, is a novel qualitative field which is neither matter nor energy. This study was designed to investigate the effects of Faradarmani CF, on autonomic nervous system (ANS) functioning. For this purpose, heart rate variability (HRV) and skin conductance (SC) indices were measured as reliable indicators of ANS changes under the influence of Faradarmani CF. 50 random volunteers (23 females, 27 males; 23 to 77 years of age) take part in this double-blinded study. In order to record a rest mode from the autonomic nervous system as a baseline, each recording was carried out 10-15 minutes after the arrival of the participant to the lab, at least 1 hour after breakfast and before lunch (10 am - 12 noon). The data was recorded in two 5-min sections under fixed environmental conditions. The first 5-min, which is considered a base situation, was recorded without Faradarmani CF. In the second 5-min, participants were under the influence of Faradarmani CF. To obtain HRV parameters, the heart rates (HR) data, derived from BVP signals, was analyzed by power spectral analyses, computed by the biofeed-back device (at the Medina Teb Company, Tehran) in both time and frequency domains. Finally, the HRV and SC data were analyzed by two-tailed statistical analysis followed by Tukey post hoc test to compare Faradarmani with baseline mode. Two types of variations, (1) increasing or (2) decreasing, were observed in the studied indices under the effect of Faradarmani CF. Two-tailed statistical analysis of each type exhibited major alterations in HRV parameters, not SC, compared to the baseline. Comparative analysis of the frequency and time domain of HRV showed more significant changes in the frequency domain (VLF:  $P_1=0.0016$ ,  $P_2=0.0147$ ; LF:  $P_1<0.001$ ,  $P_2=0.008$ ; HF:  $P_1=0.0338$ ,  $P_2=0.0086$ ; LF/HF:  $P_1=0.0011$ ,  $P_2=0.0119$ ) compared to the time domain (PNN50:  $P_1=0.0464$ ). According to the results, not only Faradarmani has a significant effect on ANS functioning, but also it exerts different variations on HRV parameters indicating a kind of consciousness that considers one's condition and need.

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**Keywords:** Faradarmani; Taheri Consciousness Fields; Heart Rate Variability; Skin Conductance; Autonomic Nervous System

## Abbreviations and Acronyms

Measure	Experimental
ANS	Autonomic Nervous System
CAM	Complementary and Alternative Medicine
CCN	Cosmic Consciousness Network
CF	Consciousness Field
HF	High Frequency
HR	Heart Rate
HRV	Heart Rate Variability
LF	Low Frequency
PNN50	Percent difference between Normal to Normal intervals greater than 50 milliseconds
SC	Skin Conductance
SDNN	Standard Deviation of Normal to Normal intervals
TCFs	Taheri Consciousness Fields
VLF	Very Low Frequency

## INTRODUCTION

Industrialized life has caused many health issues, such as inactivity, poor nutrition, and environmental stress, all of which cause mental and physical illnesses (Booth et al., 2011; Fang et al., 2019). The presence of the disease has caused defects in the work and behavioral systems of individuals (Concha-Barrientos et al., 2004; Mols et al., 2010) and this also causes a series of abnormalities in the community (Wen et al., 2005). As problems increase and become more complex, diagnosis and treatment become more difficult as well, especially if it is hysterical, and the cause is not clear (Abse, 2013). With incurable and un-treated diseases such as Corona and the fear of becoming infected and reduced referral to doctors and psychologists, the rate of people's problems will increase (Hossain et al., 2020).

The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and

series have been proposed in this area. In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri-Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. According to this theory, there are various 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 consciousness is related to the practical application of the TCFs. TCFs can be applied to all living and non-living creatures, including plants, animals, microorganisms, 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



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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 exist-

ence, 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 regard, the researchers of this article investigated the effects of Faradarmani CF by scientifically measuring its effects on heart rate variability parameters. Considering that in the science approach, the probability of being random is calculated to be less than 5% and the seal of approval is put on the test result when there is a difference of more than 95% between the groups, it can be said that if the result is significant, it is valid. Meanwhile, the accuracy of this approach will be determined by statistical analysis.

According to the mentioned cases, the purpose of this study is to investigate the effect of Faradarmani on autonomic nervous system (ANS), functioning through heart rate variability (HRV) and skin conductance (SC) indices measurements.

## METHODS

### *Faradarmani CF application*

50 participants of both genders were under the influence of Faradarmani CF according to the protocols mentioned on the website of research management in the CFs ([www.cosmointel.com](http://www.cosmointel.com)).

Gaining an announcement is free of charge (in the “assign announcement section”). In order to study at any time and place, the researchers, after registration on the mentioned website, introduce the test to the guidance center. For example, the number of samples, controls, and their contractual names must be specified.

This study was conducted in a double-blinded manner. It means that not only the participants and recording technicians were not informed about the purpose of the research, but also the Faradarmangar did not know anyone.

Inclusion criteria were freedom from any cardiovascular disease and consuming no related medication. To achieve this, before performing the test, the volunteers were asked to fill out a questionnaire about their general health and medical history to ensure that all participants in the study have a normal healthy cardiovascular function and are not consuming an effective drug in the activity of the autonomic nervous system (Aronson et al., 2001; Bekheit et al., 1990).

Finally, HRV and SC were recorded in 50 healthy subjects (23 females, 27 males; 23 to 77 years of age; education level from bachelor to PhD), after receiving their written consents to participate in the study.

Since ANS functioning can be influenced by either the environmental conditions of experiments or the psychological conditions and even breathing mode of the participants (Stauss, 2003). It is crucial to experiment under fixed optimal conditions. To do so, all the recordings were conducted under the same environmental conditions in a specific room with certain environmental factors. Moreover, the recordings were carried out at least 1 hour after breakfast and before lunch, between 10 a.m. and 12 noon, to avoid the influences of cir-

cadian rhythm (Kleiger et al., 1991).

In order to record a rest mode from the autonomic nervous system as baseline and to avoid the influences of daily physical factors on autonomic activity (Soares-Miranda et al., 2014), not only the participants were not allowed to perform the physical exercise the day before the examination, but also they were asked to keep the body still and relaxed for 10-15 minutes after arrival to the examination lab for baseline recording in a motionless sitting position.

It should be noted that since each participant's data is compared to him/herself (before and after Faradarmani CF treatment) and not to each other, the issue of matching participants is resolved. However, the subjects were asked to breath slowly and steadily in both recording series (base and Faradarmani CF) to minimize the experiment error.

## HRV-SC RECORDING

A 4-channel biofeedback device (at the Medina Teb Company, Tehran) was used for this study. Data of all 50 volunteers were recorded on 6 successive days (10 am-12 noon). Once fixing the blood volume pulsation (BVP) and SC electrodes to the fingers of the participants, the autonomic data were recorded continuously (beat-to-beat) and non-invasively in two 5-min sections.

The first 5-min, which is considered a base situation, was recorded without any intervention. In the second 5-min, Faradarmani CF treatment was administered in a double-blinded manner by a Faradarmangar from a long-distance. To obtain HRV parameters, the heart rates (HR) data, derived from BVP signals, were analyzed by power spectral analyses, computed by the biofeedback

device in both the time and frequency domains, based on the one firstly proposed by Bianchi (Bianchi et al., 1997).

## STATISTICAL ANALYSES

All statistical analyses were accomplished using the GraphPad InStat 3 statistical package (GraphPad InStat Software, San Diego, CA). Data were analyzed by two-tailed statistical analysis followed by Tukey post-hoc test comparisons and stated as mean  $\pm$  SEM. P-values less than 0.05 represented statistically significant differences.

## RESULTS

Two types of variations, (1) increasing or (2)

decreasing, were observed in the studied indices under the effect of Faradarmani CF. Two-tailed statistical analysis of each type exhibited major alterations in HRV parameters compared to the baseline.

Comparative analysis of the frequency and time domains of HRV demonstrated more significant changes in the frequency domain (VLF:  $P_1=0.0016$ ,  $P_2=0.0147$ ; LF:  $P_1<0.001$ ,  $P_2=0.008$ ; HF:  $P_1=0.0338$ ,  $P_2=0.0086$ ; LF/HF:  $P_1=0.0011$ ,  $P_2=0.0119$ ), compared to the time domain (PNN50:  $P_1=0.0464$ ).

### Frequency-Domain Analysis of HRV

Figure 1 (a, d, g, j) illustrates %VLF, %LF, %HF, %LF/HF of 50 participants before (red line) and after Faradarmani CF (green line). At first glance, the changes seem irregular and inconsistent. As-



**Figure 1.** Comparison of frequency-domain parameters of HRV (VLF, LF, HF, LF/HF) between baseline (red) and Faradarmani CF (green) modes of each participant.

suming that the effect of the Faradarmani CF depends on a patient's needs, each chart was separated into the increased (b, e, h, k) and decreased (c, f, i, l) HRV groups. This was for each frequency-domain parameter to track the changes more clearly.

Statistical analysis of frequency-domain parameters of HRV represents significant changes in VLF (increased:  $P1=0.0016$ , decreased:  $P2=0.0147$ ), LF (increased:  $P1<0.001$ , decreased:  $P2=0.008$ ), HF (increased:  $P1=0.0338$ , decreased:  $P2=0.0086$ ), LF/HF (increased:  $P1=0.0011$ , decreased:  $P2=0.0119$ ) between Faradarmani and baseline mode (Figure 2).

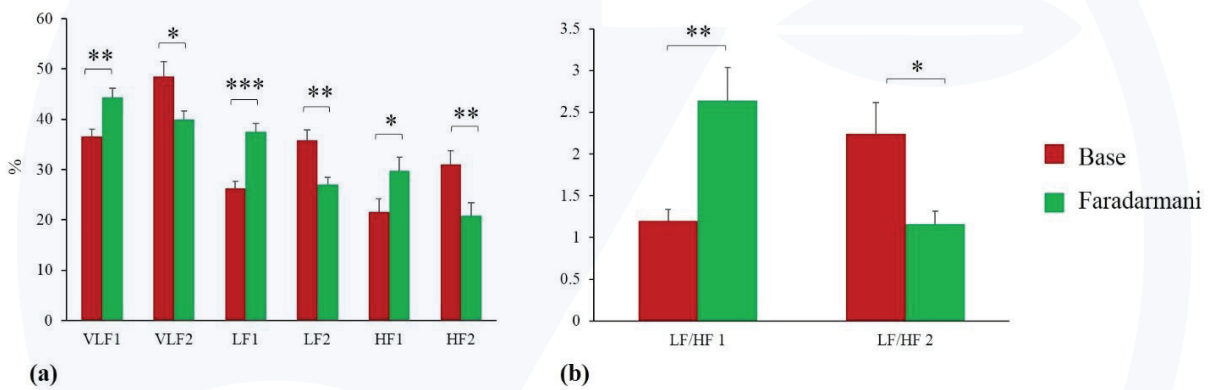


Figure 2. Statistical analysis of frequency-domain parameters of HRV between baseline (red) and Faradarmani CF (green).

### Time-Domain Analysis of HRV

Figure 3 (a, d) illustrates the PNN50 and SDNN of 50 participants before (pink line) and after Faradarmani CF (green line). Separating each chart into the increased (b, e) and decreased (c, f) HRV groups for each time-domain parameter displays the changes noticeably in each person pre and post-Faradarmani.

Figure 4. Statistical analysis of time-domain parameters between baseline (pink) and Faradarmani CF (green).

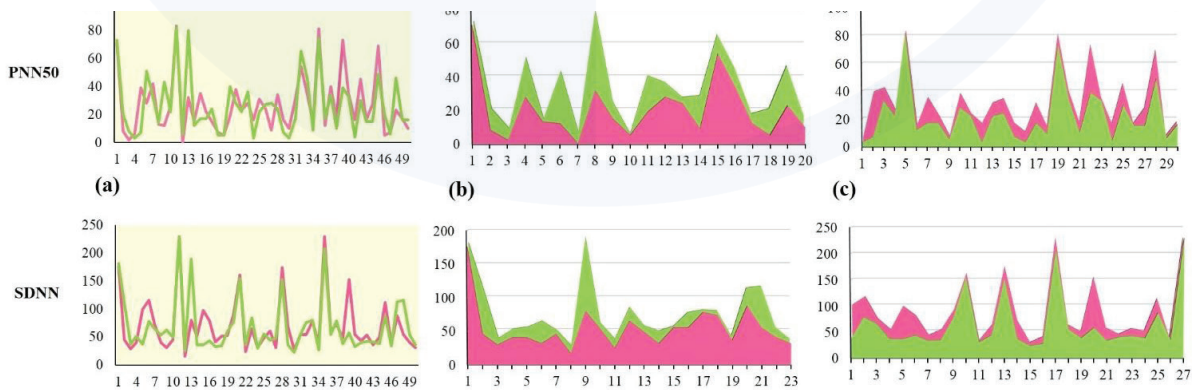
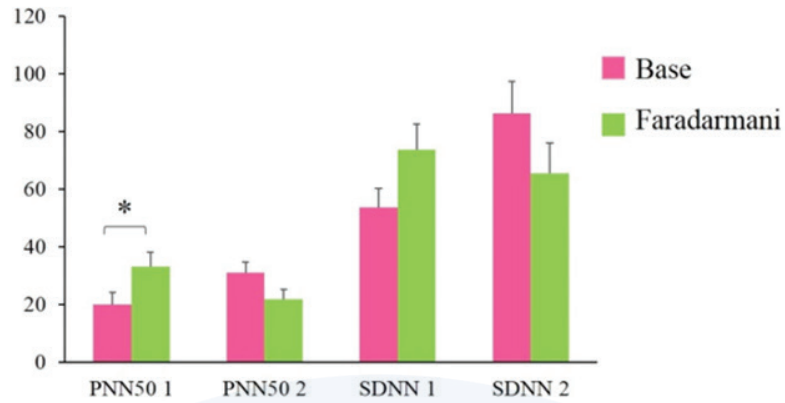


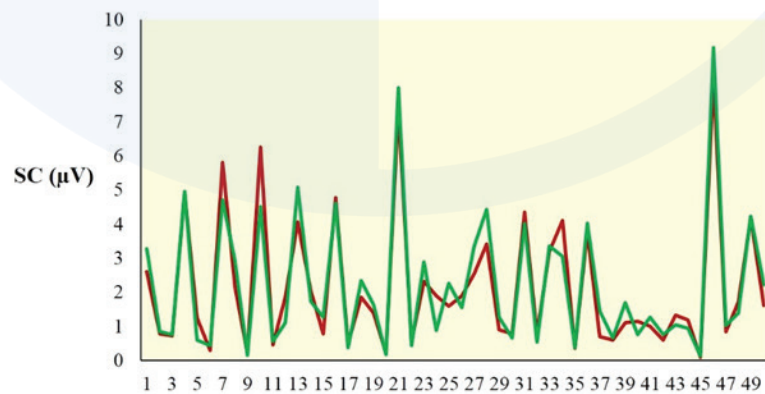
Figure 3. Comparison of time-domain parameters of HRV (PNN50, SDNN) between baseline (pink) and Faradarmani CF (green) modes of each participant.



**Figure 4.** Statistical analysis of time-domain parameters between baseline (pink) and Faradarmani CF (green).

**Table 1.** Comparison of variables between baseline and Faradarmani.

Parameters	Base (mean)	± SEM	Faradarmani (mean)	± SEM	P-Value
VLF1	36.586	1.489	44.405	1.825	0.0016
VLF2	48.557	2.898	39.974	1.716	0.0147
LF1	26.29	1.417	37.494	1.644	0.001
LF2	35.859	1.995	27.074	1.425	0.008
HF1	21.627	2.529	29.78	2.721	0.0338
HF2	31.016	2.727	20.829	2.553	0.0086
LF/HF 1	1.2	0.1371	2.639	0.3954	0.0011
LF/HF 2	2.241	0.3792	1.156	0.1623	0.0119
PNN50 1	20.2	3.971	33.2	4.907	0.0464
PNN50 2	31.033	3.896	21.933	3.529	0.887
SDNN 1	53.652	6.806	73.739	9.002	0.0820
SDNN 2	86.333	10.979	65.519	10.633	0.1791



**Figure 5.** Comparison of SC between Baseline (red) and Faradarmani CF (green).

Analysis of frequency-domain parameters of HRV reveals statistically significant changes in PNN50 (increased:  $P=0.0464$ ) between Faradarmani CF and baseline mode (Figure 4). No significant differences were observed in SDNN pre and post-Faradarmani CF.

As shown in Table 1, the changes in the frequency and time domains of HRV under the influence of Faradarmani CF are significant. The most major changes are in the frequency-domain parameters of HRV.

### *Skin Conductance*

Two-tailed statistical analysis exhibited no major alterations in SC under the influence of Faradarmani CF compared to the baseline.

## **DISCUSSION AND CONCLUSION**

The study of new treatments in the present age can be a starting point for the development or perhaps a change in the type of treatment in medical research. Many studies have been done so far on the influence of different complementary and alternative medicine (CAM) on heart rate and HRV. For example, there are studies on the effects of mindfulness (Delizonna et al., 2009; Krygier et al., 2013; Mankus et al., 2013; Shearer et al., 2016), and acupuncture (Anderson et al., 2012; Lee et al., 2010; Streitberger et al., 2008) on HRV that focus more on their effects, while their mechanisms of actions are still unclear.

It is notable that the other types of CAM, such as meditation and mindfulness, show a consistent effect in increasing HRV during the practice sessions, regardless of the person-to-person situation and need (Kirk et al., 2020; Nesvold et al., 2012). As for meditation, a meta-analysis study

conducted in 2020 with participation by a group of researchers from the UK, Brazil, and the USA has systematically reviewed adverse meditation events (MAEs). According to this review of the wide literature published between 1974 and 2019, individuals with and without previous history of mental health problems may experience harmful effects, particularly anxiety and depression (with a prevalence of 8.3%), during or after meditation practices. The occurrence frequency is comparable to those reported for psychotherapy practice in general (Farias et al., 2020).

As mentioned in the introduction section, although Faradarmani CF is not measurable directly and quantitatively, it is possible to investigate its effects through various experiments. In previous studies, we observed the effects of the CF on MCF7 cancer cell line (Taheri et al., 2020), Alzheimer's disease in vivo and in vitro models (Taheri et al., 2021a), spatial memory and avoidance behavior of a rat model of Alzheimer's disease (Taheri et al., 2021b), Wheat plant (Torabi et al., 2021), Bacterial population growth (Taheri et al., 2021), Viral growth (Taheri et al., 2021c) and the electrical activity of the brain during Faradarmani in the Faradarmangars population (Taheri et al., 2020a). According to the results, not only Faradarmani CF, even from far distance, has its significant effects on ANS functioning, but also it exerts different variations on HRV parameters indicating T-Consciousness that considers one's condition and need. However, further research needs to be done in identifying the effects of the Faradarmani CF.

According to the studies on the effects of different methods of CAM on SC reactivity, it seems to need a long-time period on a time scale of several months for significant changes to be detected (Kelm et al., 2018). We suggest that the effects of

Faradarmani CF be screened in a long-time period in future studies.

## CONFLICT OF INTEREST

The authors report no conflict of interest.

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## Prior Works Submitted in other Publications

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In another study titled “Influence of Faradarmani Consciousness Field (CF) on Spatial Memory and Passive Avoidance Behavior of Scopolamine Model of Alzheimer Disease in Male Wistar Rats,” (Authors: Mohammad Ali Taheri, Sara Torabi, Noushin Nabavi, Farid Semsarha), we evaluated the influence of Faradarmani CF on scopolamine-induced memory impairments in male Wistar rats. The passive avoidance and Morris water maze (MWM) tests were conducted to evaluate the memory function in scopolamine-induced rats. The results of passive avoidance and MWM tests showed a significant decrease in spatial memory and cognitive function in scopolamine groups, whereas Faradarmani CF improved scopolamine-induced cognitive impairment. In conclusion, this experiment suggests that Faradarmani CF, as a non-material/non-energetic Field, can be a safe and suitable way to treat or prevent learning and memory disorders.

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Mohammad Ali Taheri is a scholar, visionary thinker, and innovationist known for his numerous theoretical concepts, including Cosmic Consciousness Network (CCN) and Taheri Consciousness Fields (TCFs) with over 40 years of history. T-Consciousness is introduced and defined as one of the constituent components of the Cosmos in addition to matter and energy, from which TCFs, as non-material/non-energetic fields, are derived. TCFs are unique qualitative fields that are immaterial in nature but have a direct effect on matter and energy, including humans, animals, plants, microorganisms, molecules, cells, and particles. As far as the practical application of T-Consciousness is concerned, two complementary medicines of Faradarmani and Psymatology have been introduced and put into practice.

In 2020, Mohammad Ali Taheri introduced Sciencefact, that utilizes science as a means to demonstrate and record the effects of TCFs. Although science studies matter and energy alone, Sciencefact and science do share a common ground which is reproducible laboratory experiments that involve matter and energy. What distinguishes Sciencefact from science is the investigation and utilization of CCN through the application of the TCFs.

Established and managed by Mohammad Ali Taheri in 2022, the Journal of Cosmointel is an all-science journal that publishes original research on TCFs. As a scientific journal, all types of scientific research that adhere to ethical guidelines and publishing standards of Cosmointel Journal and T-Consciousness research protocol are eligible for publication. Cosmointel establishes the guidelines for conducting scientific research on TCFs and publishes the results in its journal spanning various disciplines, including biology, T-Consciousness biology, physics, engineering, material science, medicine, neurosciences, psychology, etc.