

Electroencephalography Based Analysis of Brainwave Responses During I Kuan Tao Three Treasures Practice

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ABSTRACT

I-Kuan Tao emphasizes spiritual cultivation through the practice of the Three Treasures, which is believed to influence physical, mental, and spiritual well-being through changes in brain wave activity. **The purpose** of this study was to investigate the effects of Tao-receiving of I-Kuan Tao and the practice of the Three Treasures on brain wave patterns. **To achieve this**, 32 volunteers were recruited, and their brain waves were measured using an electroencephalograph developed by Neurosky Company. Brain wave data were collected under various conditions. Initially, brain waves were measured for 3 minutes in the natural state with 32 samples. After Tao-receiving, brain waves were measured again in the natural state for 3 minutes with 15 samples. Subsequently, brain waves were measured for another 3 minutes during the practice of the Three Treasures, with 32 samples collected. After one month of practicing the Three Treasures, participants were invited back for a second round of testing. In the natural state, brain waves were measured for 3 minutes with 4 samples. Following the Three Treasures practice, brain waves were measured again for 3 minutes with 4 samples. The collected data were analyzed using descriptive statistics and paired-sample *t*-tests. **The results** showed a very significant difference ($p < 0.001$) in attention improvement and fatigue reduction. The δ wave showed a very significant difference ($p < 0.01$), while the relaxation index (Meditation) and pressure index (Pressure) demonstrated a significant difference ($p < 0.05$). In other words, after participating in the Tao-receiving of I-Kuan Tao, there was an immediate improvement in attention, meditation, δ and θ waves, along with a reduction in fatigue and pressure, contributing positively to the coordination of body and mind. Furthermore, after one month of practicing the Three Treasures, significant changes were observed in brain wave patterns in the natural state, including reduced fatigue and increased intensity of the δ wave. **This indicates** that sustained practice of the Three Treasures enhances the production of δ waves, facilitating deeper sleep and effectively reducing fatigue.

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1. INTRODUCTION

I-Kuan Taoism, a modern religious movement that emerged in early 20th-century China, blends elements of Taoism, Confucianism, and Buddhism into a unified spiritual practice. It emphasizes the integration of these philosophies to promote personal spiritual growth and societal harmony. While I-Kuan Taoism does not have a formal medical system like traditional Chinese medicine, it advocates for a holistic approach to health, focusing on maintaining balance and harmony within the body and mind [1]. Practices such as meditation and ethical living are encouraged to support both physical and mental well-being, and some practitioners may incorporate aspects of traditional medical practices to address specific health concerns.

In the broader context of sustainable development, this research contributes to the achievement of the United Nations Sustainable Development Goal (SDG) 3, Good Health and Well-being, which emphasizes the promotion of mental health, psychological well-being, and preventive healthcare through evidence-based approaches. Recent advances in neuroscience have demonstrated that electroencephalography (EEG) provides an objective and non-invasive method for evaluating the neurophysiological effects of meditation and contemplative practices. By investigating changes in attention, relaxation, stress, fatigue, and brainwave activity associated with Tao-receiving and the practice of the Three Treasures, this study seeks to provide scientific evidence that supports the integration of spiritual practices with modern neurophysiological assessment, thereby contributing to healthier lifestyles and improved mental well-being.

From observing the clinical outcomes of patients and their families, the researchers frequently noticed remarkable improvements, such as quicker recovery times, reduced susceptibility to recurring illnesses, enhanced focus in children, significant improvements in learning ability, and marked academic progress. In some cases, patients who experienced chronic tension, anxiety, or long-term dependence on sleeping pills found that, after practicing I-Kuan Tao's Three Treasures, their body, mind, and spirit became more relaxed, enabling them to sleep well without medication.

These various clinical manifestations intrigued the researchers [2, 3]. Subsequently, studies conducted by Guo Mingyi and the Taichung National Museum of Science and Technology on the effects of Tao-receiving and the practice of the Three Treasures on brainwave activity revealed that these practices produced rapid and positive changes in EEG signals. The generation of favorable brainwave patterns was reported to contribute positively to physical, mental, and spiritual health.

The "Three Treasures" (Sanbao) is a concept found in various Chinese philosophical, spiritual, and medical traditions, including Taoism and Traditional Chinese Medicine (TCM). It refers to three essential components that are considered fundamental to human life and well-being. The Three Treasures consist of the following components:

- Jing (Essence) is regarded as the vital life force that forms the foundation of physical vitality. It is associated with growth, development, reproduction, and overall physical health. Jing can be preserved and strengthened through proper nutrition, exercise, meditation, and healthy lifestyle practices.
- Qi (Energy) represents the life force that flows throughout the human body and the universe. It powers both physical and mental activities. In Traditional Chinese Medicine, maintaining the balanced circulation of Qi is essential for health, and practices such as Qigong, Tai Chi, acupuncture, and breath control are intended to regulate and harmonize its flow.
- Shen (Spirit) refers to consciousness, emotions, and spiritual awareness. Cultivating Shen is associated with wisdom, mental clarity, and inner peace. Meditation, mindfulness, and spiritual cultivation are commonly practiced to strengthen and balance Shen [3, 4].

In Taoist philosophy, cultivating Jing, Qi, and Shen is considered essential for achieving spiritual development, longevity, and harmony between the body and mind. Practices that preserve and enhance the Three Treasures including meditation, proper diet, physical exercise, and spiritual cultivation are believed to promote balanced physical, psychological, and spiritual well-being.

The purpose of this study is to investigate changes in individual brainwave patterns, specifically low α , high α , low β , high β , θ , and δ waves. Additionally, the study evaluates variations in concentration (attention), meditation, stress, and fatigue under different experimental conditions using EEG measurements [5].

The experimental conditions are as follows:

- Investigate the natural state before and after Tao-receiving.

- Compare the natural state before Tao-receiving with the effects of practicing the Three Treasures immediately after Tao-receiving, as well as compare the natural state after Tao-receiving with the corresponding practice condition.
- Assess the impact of practicing the Three Treasures immediately after Tao-receiving and after one month of continuous practice.
- Compare the effects of practicing the Three Treasures immediately after Tao-receiving with the natural state following one month of continuous practice.
- Extract a subgroup that regularly practices meditation to examine their natural state before Tao-receiving and after practicing the Three Treasures.
- Extract a subgroup that practices Qigong to investigate changes in their natural state before Tao-receiving and after practicing the Three Treasures.
- Extract a subgroup that exercises regularly to examine changes in their natural state before Tao-receiving and after practicing the Three Treasures.
- Extract a subgroup that practices Tai Chi to examine their natural state before Tao-receiving and after practicing the Three Treasures [6].
- Extract a subgroup that frequently listens to classical music to explore their natural state before Tao-receiving and after practicing the Three Treasures.
- Extract tea-drinking and coffee-drinking groups from the main participant cohort to investigate their natural state before Tao-receiving and their responses while practicing the Three Treasures after Tao-receiving.

Collectively, these experimental comparisons provide a comprehensive framework for evaluating the immediate and sustained neurophysiological effects of Tao-receiving and the practice of the Three Treasures across participants with different lifestyle characteristics. Unlike previous studies that primarily focused on meditation or Qigong independently, this study integrates multiple experimental conditions with lifestyle-based subgroup analyses to investigate both immediate and longitudinal EEG responses associated with the practice of the Three Treasures. By examining overall and subgroup-specific responses, this research aims to provide a more comprehensive understanding of how spiritual practice influences attention, relaxation, stress, fatigue, and brainwave dynamics [7, 8]. The findings are expected to contribute not only to the scientific understanding of the neurophysiological mechanisms underlying Taoist spiritual practices but also to evidence-based approaches supporting SDG 3 through the promotion of mental well-being and preventive healthcare. To establish the theoretical foundation for these investigations, the following section reviews previous studies on EEG brainwave analysis, meditation, Qigong, and related spiritual practices that have informed the development of the present research.

2. RELATED WORK

Scientists discovered decades ago that human brain activity produces brain waves, which are closely tied to a person's health, energy levels, behavior patterns, and even their destiny. Changes in brain waves are influenced by psychological states such as excitement, desire, anxiety, stress, and tranquility. If these psychological states can be effectively managed, it holds significant potential to improve health and living conditions. The ability to learn how to control brain waves is a tangible opportunity that can profoundly impact people's lives [9, 10].

2.1. EEG Brainwaves

Brain waves were first identified by the German psychiatrist Dr. Frederic Hans Berger in 1929 [11]. Inspired by observing electric eels producing electrical discharges, he proposed that similar electrical activity existed in the human brain, leading to the discovery of electrical pulsations generated by neural cells. Brain waves originate from electrical impulses produced by nerve cells and vary according to their frequencies, each

producing different physiological and psychological effects. Excessive electrical activity, for example, may trigger epilepsy [1].

Brain wave activity can also be affected by external stimuli such as light and sound. In general, brain waves are classified into five frequency bands, namely delta (δ), theta (θ), alpha (α), beta (β), and gamma (γ). Delta waves (1–3 Hz) are characterized by high amplitude and are strongly associated with deep sleep and unconsciousness, making them closely related to sleep quality [12, 13]. Theta waves (4–7 Hz) are linked to subconscious processes, including beliefs, attitudes, expectations, hypnosis, and meditation. When theta activity dominates, individuals become more receptive to external stimuli, and long-term memory retention is enhanced. Theta waves are also known as “Buddha’s brain waves” because they are traditionally believed to have appeared when Shakyamuni attained enlightenment [14].

Alpha (α) waves occur within the frequency range of 8–12 Hz and become dominant when an individual is awake but physically and mentally relaxed. During this state, the body consumes less energy while the brain functions more efficiently, supporting information processing, creativity, learning, and positive emotional states [3, 4, 15], reported that increased alpha and theta activity in the frontal lobe is associated with relaxation, inward concentration, cognitive processing, and reduced attention to external distractions. This phenomenon is often referred to as “looking inward.” In clinical psychiatry, alpha waves have been applied to reduce anxiety and tension, while alpha-wave music has also been introduced to improve learning, memory, and concentration [5, 9], demonstrated that increased alpha activity before movement is an indicator of optimal mental performance in precision sports. Studies involving athletes in shooting, archery, and golf further showed that elite performers maintain an effective balance between concentration and relaxation, reflected by lower amplitudes of both low- and high-alpha waves than non-professional athletes [9, 16].

Beta waves range from 13 to 30 Hz and are associated with wakefulness, concentration, logical thinking, calculation, and anxiety. Increased beta activity prepares the body to respond to external stimuli but may also produce excitement, stress, and mental fatigue when excessively elevated. Conversely, moderate beta activity supports attention and cognitive performance, while many sedative medications reduce beta activity to induce relaxation [17]. During rest with closed eyes, alpha waves become more prominent, whereas opening the eyes and receiving external stimulation suppresses alpha activity and increases beta activity. Relaxation has also been reported to stimulate alpha waves and the release of beneficial hormones [18, 19], described alpha waves as indicators of relaxed alertness and stable wakefulness, whereas beta waves (13–30 Hz) are associated with emotional involvement in work and heightened mental activity [20]. Both alpha and beta waves are present during wakefulness [14]. However, alpha waves predominate during relaxed states, whereas beta waves become more dominant during concentration and stress, while theta and delta waves are primarily related to sleep [9]. Numerous studies have also demonstrated that alpha and beta activities are closely associated with concentration. Alpha waves promote a relaxed yet attentive mental state that enhances memory and learning [21], whereas beta-wave amplitude reflects alertness and logical thinking [22]. Increased beta activity is commonly observed during nervousness and anxiety, while reduced beta activity indicates a more relaxed mental condition [23].

2.2. The Effect of Qigong Practice on Brain Waves

Qigong practice involves adjusting postures, maintaining even breathing, and relaxing the limbs. As a result, alpha waves in the brain can increase significantly, and the flow of qi through the meridians may enter what is known as a “resonance state.” Alternatively, the brain may experience a state of emptiness where alpha waves are suppressed or disappear. These are two distinct states that can occur during qigong practice. Research by [24, 25], on two qigong masters revealed that alpha wave activity in the frontal lobe is significantly enhanced when the practitioners are in a qigong state, and these waves also appear in the posterior part of the brain when they are at rest. Similarly, a study by [26] found comparable results in the brain wave analysis of qigong practitioners. Additionally, [22, 27], used Electroencephalography (EEG) to examine the positions of 13 electrodes in the brains of qigong practitioners and found increased alpha and theta wave activity during qigong practice.

Research on brain waves has shown that regardless of the Qigong school practiced, reaching an advanced level often involves entering a state of deep concentration [26], conducted an Electroencephalography (EEG) study and found that when a Qigong practitioner is in a Qigong state, the brain exhibits α waves at frequencies of 8–12 Hz. The characteristics of these α waves can serve as an indicator of the practitioner’s skill level. Li Si-Cen also noted that if a practitioner’s mental state reaches a certain level, α waves in the

brain may significantly decrease or even disappear, a phenomenon he described as "Entering Into a State of Concentration."

Another method, the Taoist Small Zhoutian exercise, promotes a notable increase in α waves, accompanied by a synchronous resonance phenomenon referred to as the "Resonance State" of Qigong. Observed similar results in a study comparing a Qigong group with a control group. The Qigong group exhibited increased α and θ waves across all 13 electrode positions in the brain during the Qigong state. Investigated the effects of Qigong on theta, alpha, and beta brain wave frequencies. The study confirmed that the Qigong group had significantly higher power in theta and alpha waves compared to the control group, while beta wave power was significantly lower.

3. PROPOSED METHODOLOGY

Mind Wave Mobile [28] is a non-invasive brainwave measurement device developed by NeuroSky, an American company specializing in consumer-grade Electroencephalography (EEG) technology. The device is designed to measure individuals' levels of concentration and relaxation by detecting electrical activity generated by the brain [29]. The frontal lobe FFT (Fast Fourier Transform) accuracy of the device has been reported to be approximately 96% comparable to that of the medical-grade NeuroScan EEG device, which has an estimated cost of \$40,000\$ [25]. This high level of agreement demonstrates that the NeuroSky Mind Wave Mobile can provide reliable brainwave measurements while offering a more accessible and cost-effective alternative for research and educational applications. Figure 1 presents a comparison of the EEG readings obtained from the NeuroSky Mind Set and the medical-grade NeuroScan EEG device. The NeuroSky device incorporates ThinkGear technology, which captures analog brain signals, commonly referred to as brain waves, and converts them into digital data through signal processing techniques. These digital signals are subsequently transmitted via Bluetooth, enabling seamless communication with computers or mobile devices and allowing various interactive applications to process the data for real-time monitoring and control [30, 31].

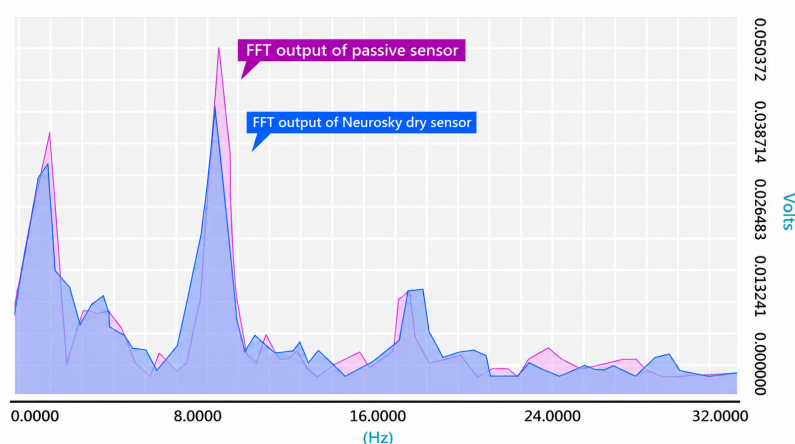


Figure 1. Comparison of EEG images between Neuro Sky Mind Set and medical-grade Neuroscan EEG monitor

This brain wave measurement system has been extensively utilized in both domestic and international research institutions [6, 9, 32], as well as in athlete research [21, 22, 25]. Studies have demonstrated its convenience, comfort, and usability [2, 33].

3.1. Research Structure

The research method and framework of this study were developed based on similar international studies [27]. The study consisted of three stages. First, all participants were examined to identify changes in brain waves before and after the experiment, and the results were analyzed using the principles of the Consistent Tao. Second, participants were evaluated to determine differences in brain waves while using the Three Treasures before and after seeking the Tao. They were also classified according to their living habits based on questionnaire responses, and differences in brain waves under the same conditions were analyzed [34, 35]. Third,

after practicing the Three Treasures for 5 minutes daily for one month, the Taoists underwent another brain-wave measurement, consisting of 3 minutes in a natural state followed by 3 minutes while practicing the Three Treasures. The results were analyzed together with the principles of the Consistent Tao.

Figure 2 illustrates the research flowchart. Brainwave measurements were conducted in a quiet Japanese-style room on the second floor of the Zhengqi Buddhist Hall, founded by alumni of Chongde Taichung National Medical University in Guan Dao Fa. All measurements were conducted by the author, and the complete brainwave measurement process is presented in Figure 2 [20, 29].

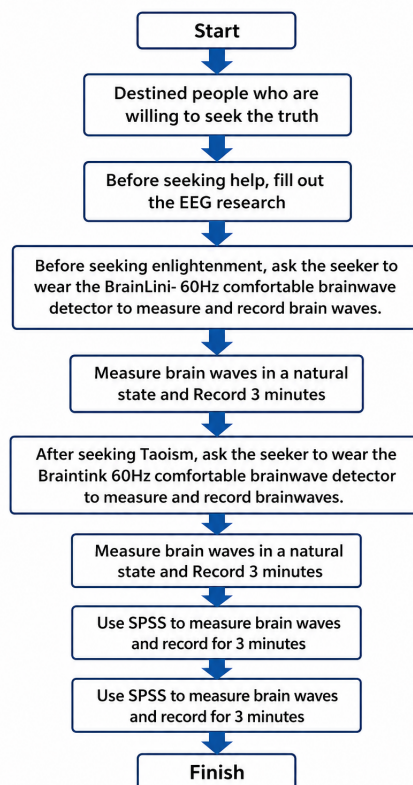


Figure 2. Flowchart of Brainwave Measurement on the Day of Seeking Enlightenment

This research required establishing positive relationships with individuals willing to seek the Tao. Once a person agreed, a date was arranged, and the master and staff were invited to assist with the Tao-seeking ceremony [36]. Before the ceremony, the purpose of the study and important precautions were explained. Participants then completed a consent form for the EEG study and a questionnaire. Afterward, their brain waves were measured, followed by a solemn and grand Tao-seeking ceremony.

During the ceremony, two masters Yiguandao Dianshi, who received the destiny stood in for the master, Living Buddha Jigong, and his wife, Yuehui Bodhisattva, to teach the seeker the Tao and the Three Treasures. After the seeker received the Three Treasures, a lecturer from Yiguandao explained how to use them. Once the seeker demonstrated their understanding of the Three Treasures, brain waves were measured again. This second measurement was taken within half an hour of explaining the Three Treasures and lighting the Buddha lamp [37, 38]. All brain wave measurements for this study were conducted by the first author, following the protocol for using the brain wave instrument.

After praying for the Tao on the designated day, we will invite Taoist practitioners who are willing to commit to practicing with the Three Jewels for 5 minutes every day. This practice will continue for one month. To verify their daily participation, we will first ask them to join the Three Treasures practice group on the day they seek the Tao, and a daily Google questionnaire will be sent to remind them to use the Three Jewels in their practice. Out of 32 participants, only 4 have consistently practiced for more than 25 days. After completing a month of practice, they will be invited back for a follow-up brainwave test [1, 33]. A one-week buffer will be

provided to accommodate participants' schedules. If anyone has not practiced the Three Jewels consistently for a month before the brainwave test, they will be reminded to continue their practice using the previous method before undergoing another test [39].

3.2. Measurement Methods

The statistical data processing method used in this study is as follows. The standard deviation values of the subjects' brain waves were calculated, and the mean values were analyzed using a paired sample t-test. The paired t-test is primarily employed to determine whether there is a statistically significant difference in the mean scores of two related groups. In this context, paired samples refer to two sets of observations obtained from the same participants under different conditions [40]. This method is appropriate for comparing the mean difference between two dependent measurements and assessing whether changes within the same participants over time are statistically significant. In this study, an initial brainwave measurement was obtained before the intervention, followed by a second measurement after the intervention. These two measurements formed paired observations for each participant [41]. By adopting this within-subject design, the influence of individual characteristics, such as age, body weight, and other biological differences, was minimized, thereby improving the accuracy of the comparison [38, 42]. Rather than treating the two measurements as independent samples, the paired sample t-test evaluates the differences between paired observations. Consequently, each participant serves as both the control and the experimental subject, reducing variability caused by external confounding factors [43].

The statistical analysis was conducted using IBM SPSS Statistics. The paired sample t-test was applied to analyze the standard deviation values of the EEG variables. Since the sample size exceeded 30 participants, the t-distribution closely approximated the normal distribution, making the paired sample t-test suitable for hypothesis testing in this study [44, 45].

The required sample size was calculated using the following equation:

$$n = \frac{z^2(pq)}{e^2} \quad (1)$$

where n denotes the required sample size, z is the standard normal value corresponding to the selected confidence level (1.96 for a 95% confidence interval), p is the estimated population proportion, $q = 1 - p$, and e represents the acceptable sampling error [32].

Substituting the values into Equation (1) gives:

$$n = \frac{1.96^2 \left[\left(\frac{32}{23589192} \times 100\% \right) \times \left(100 - \frac{32}{23589192} \right) \right]}{0.05^2} = 20.84525 \quad (2)$$

Based on Equation 2, the minimum required sample size was calculated to be approximately 21 participants. Since this study involved 32 participants, the sample size exceeded the minimum requirement and was therefore considered statistically adequate for subsequent analyses.

Table 1. Preview of The Dataset

ID	δ	θ	Low α	High α	Low β	High β
1.00	36222.90	8293.74	4213.51	3062.59	2135.17	2120.44
2.00	72969.17	21256.00	6817.76	5852.35	4014.24	3423.03
3.00	594616.54	190198.88	47250.70	52300.31	28078.98	65278.35
4.00	90090.22	18887.54	9030.00	11360.26	3696.08	4844.47
5.00	10245.11	6888.16	5367.16	3018.11	1750.64	1015.55
...						
32.00	59009.21	21580.97	4799.32	5794.54	1913.00	2413.77

Table 1 presents a preview of the EEG dataset analyzed in this study. Each participant is represented by six frequency-domain variables, namely Delta (δ), Theta (θ), Low Alpha (Low α), High Alpha (High α), Low Beta (Low β), and High Beta (High β). These values were extracted from the Fast Fourier Transform (FFT) output of the EEG recordings and subsequently used in the statistical analyses [46, 47].

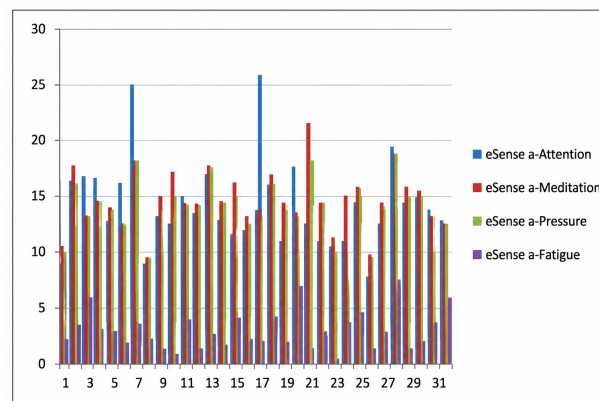


Figure 3. eSense Data Bar Chart of Using Three Jewels Brain Waves After Seeking the Truth

In the numerical statistical analysis of this study, the *p*-value was used to evaluate the degree of difference between two sets of observations. A *p*-value less than 0.05 indicates a statistically significant difference, a value below 0.01 indicates a highly significant difference, and a value below 0.001 indicates an extremely significant difference [48]. The experimental results were classified into five testing conditions, as summarized in Table 1. Figure 3 illustrates the distribution of the ten recorded EEG variables, including Attention, Meditation, Pressure, Fatigue, Delta, Theta, Low Alpha, High Alpha, Low Beta, and High Beta. Each recording consisted of 180 data points collected over a three-minute period. To reduce the influence of signal instability at the beginning and end of the recording, only the middle 120 data points (120 seconds) were used to calculate the standard deviation for each participant [49, 50]. The resulting standard deviation values were subsequently compared using the paired sample *t*-test to evaluate differences between experimental conditions.

4. RESULTS AND DISCUSSION

This section presents the experimental results and statistical analysis of EEG data collected under different experimental conditions. Descriptive statistics and paired sample *t*-tests were employed to evaluate changes in attention, meditation, stress, fatigue, and EEG frequency bands before and after the intervention. The results provide quantitative evidence of the effects of Tao-receiving and the practice of the Three Treasures on neurophysiological responses [51, 52].

4.1. Data Collection and Filtration

Participants in this study were included as long as they were willing to seek Taoism, join the research project, cooperate with the brainwave tests, and had completed the Taoist teachings, including learning how to use the Three Treasures. The study period spanned from August 8, 2017, to March 2, 2018, with a total of 32 valid samples [53].

Table 2. Valid Samples and Statistical Codes for Brain Wave Measurement in Different States

Code Name	Testing Status	Valid Sample
No Code Name	Measure brain waves for 3 minutes in a natural state before seeking enlightenment	32
a	After seeking the truth, use the Three Treasures to measure your brain waves for 3 minutes.	32
b	After seeking the truth, measure brain waves in a natural state for 3 minutes	15
c	After practicing the Three Treasures for one month, measure brain waves in a natural state for 3 minutes.	4

d	After practicing the Three Treasures for one month, use the Three Treasures to measure your brain waves for 3 minutes.	4
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As summarized in Table 2, the number of valid brainwave samples varied across different experimental conditions. The brainwave measurement process consisted of three stages. First, brainwaves were recorded for 3 minutes from 32 participants before seeking Tao. Second, brainwaves were measured for 3 minutes in a natural state after seeking Tao from 15 participants. Third, brainwaves were recorded for 3 minutes from all 32 participants while using the Three Treasures immediately after completing the Tao-seeking ceremony. After one month of practicing the Three Treasures, participants were invited to return for a follow-up brainwave assessment [54]. During this follow-up session, brainwaves were measured for 3 minutes in a natural state and for another 3 minutes while using the Three Treasures from the same four participants who completed the one-month practice period.

4.2. Parameter Setting and Results

In this section, we describe the parameters used in the statistical analysis and summarize the demographic characteristics of the research participants. Descriptive statistics were first employed to present the participants' demographic profiles and lifestyle characteristics before conducting the inferential statistical analyses.

Table 3. Basic Information of Research Sample

	Freq	%		Freq	%
Sex			Work		
M	16	50.00%	None	0	0.00%
F	16	50.00%	Student	14	43.75%
Age			Military	0	0.00%
Under 20	14	43.75%	Public	1	3.13%
21–30	7	21.88%	Teacher	0	0.00%
31–45	6	18.75%	Public	5	15.63%
46–65	5	15.63%	Business	5	15.63%
Upper 66	0	0.00%	Farmer	0	0.00%
Marriage			Freelance	0	0.00%
Unmarried	19	59.38%	Assistant	2	6.25%
Married	12	37.50%	Others	5	15.63%
Widowed	0	0.00%	Monthly Income		
Divorce	1	3.13%	Below 60.000	18	56.25%
Separation	0	0.00%	60.000–120.000	6	18.75%
Academic			Above 120.000	2	6.25%
Highschool	13	40.63%	Not filling	6	18.75%
Bachelor	18	56.25%			
Master	1	3.13%			

Table 3 presents the demographic characteristics of the research participants. The gender distribution of the research sample is evenly split, with half male and half female participants. The average age is 28.375 years, ranging from 11 to 55 years old. In terms of age distribution, 43.75% of participants are under 20 years old, 21.88% are between 21 and 30 years old, 18.75% are between 31 and 45 years old, and 15.63% are between 46 and 65 years old, indicating that most participants were younger than 30 years. Regarding educational attainment, 56.25% of participants held an associate or bachelor's degree, 40.63% had a high school education or below, and only 3.13% possessed a master's degree or higher. In terms of average monthly

household income, 56.25% of participants earned below 60,000 yuan (including 60,000 yuan), 18.75% earned between 60,000 and 120,000 yuan, and only 6.25% earned more than 120,000 yuan.

The statistics on lifestyle habits related to physical, mental, and spiritual health that may influence brainwave changes are summarized as follows.

- Meditation habits: 15.63% of participants practice meditation for less than one hour a day, while 84.38% do not meditate at all.
- Qigong practice: Only 6.25% practice Qigong for less than one hour daily, while 93.75% do not practice Qigong.
- Exercise habits: 81.25% of participants regularly exercise, while 18.75% do not.
- Tai Chi practice: 6.25% of participants practice Tai Chi, while 93.75% do not.
- Listening to classical music: 25% of participants have the habit of listening to classical music, while 75% do not.

Prior to testing brain waves, descriptive statistics were further used to examine additional factors that might influence the EEG measurements.

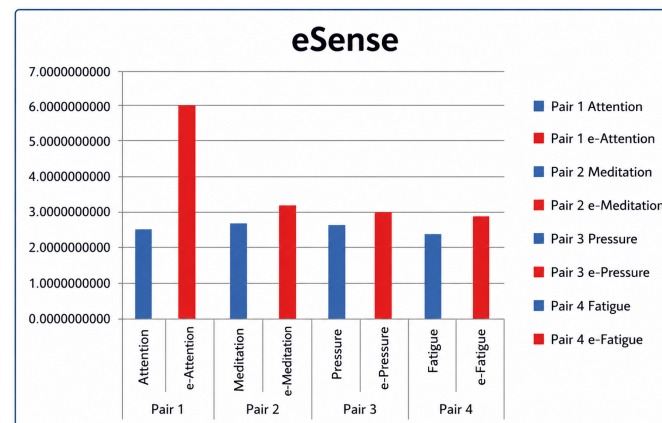


Figure 4. Bar Chart of eSense Data Showing Natural-State Brain Waves Before and After Seeking Enlightenment

- 8.57% had engaged in strenuous exercise the day before.
- 31.43% consumed caffeinated beverages such as tea or coffee.
- 8.57% stayed up late (more than 3 hours beyond their usual bedtime).
- Two participants (5.71%) were taking medication on the day of the test—one for a cold and the other for bipolar disorder (medicated for over four years).
- 45.71% of participants had none of the above conditions.

The emotional states of the participants on the day of seeking Tao were summarized as follows.

- 56.25% felt happy and satisfied.
- 3.13% (one person) felt angry or disgusted.
- 12.5% felt anticipation.
- 28.13% felt neutral or calm.

Figure 4 illustrates the eSense brainwave measurements recorded in the natural state before and after Tao-receiving, providing a visual comparison of the EEG variables analyzed in this study. This study employed the Brain-Link-60Hz comfortable brainwave detector developed by NeuroSky to collect brainwave data from seekers before and after practicing Taoism and using the Three Treasures. Data were collected for three minutes during each recording session, resulting in 180 data points under each testing condition. To improve signal stability, only the middle two minutes (120 data points) were extracted for subsequent analysis. The standard deviation values of each EEG variable were calculated and organized in Microsoft Excel before being analyzed using the paired sample t-test in IBM SPSS Statistics. In the numerical statistical analysis, the p-value was used to evaluate the degree of difference between two sets of observations. A p-value less than 0.05 indicates a statistically significant difference, a value below 0.01 indicates a highly significant difference, and a value below 0.001 indicates an extremely significant difference between the compared datasets.

5. MANAGERIAL IMPLICATIONS

The findings of this study provide practical implications for healthcare practitioners, spiritual organizations, and developers of wearable EEG technologies. First, the observed improvements in attention, relaxation, and fatigue reduction suggest that the practice of the Three Treasures may be considered as a complementary mindfulness-based approach for supporting mental well-being. Although these findings are promising, broader clinical studies are needed before routine implementation in healthcare settings.

Second, spiritual organizations may utilize EEG-based assessments as complementary evaluation tools to objectively monitor the physiological responses associated with spiritual practices. Integrating quantitative EEG measurements with participants' subjective experiences may improve the scientific credibility of spiritual education and training programs.

Finally, this study provides empirical evidence that may inform the future development of wearable EEG devices and digital wellness applications. Brainwave monitoring features based on attention, relaxation, and fatigue indicators could support personalized feedback systems for users engaging in meditation or spiritual practices.

6. CONCLUSIONS

The changes in the natural state before seeking the Tao and after using the Three Treasures include improved concentration, reduced fatigue, a more relaxed mental state, and a significant increase in the intensity of delta and theta waves. For participants who felt happy and satisfied on the day of seeking enlightenment, the brainwave changes observed before seeking the Tao and after using the Three Treasures showed similar results, reflecting the same improvements mentioned above. Compared to the natural state of brainwave changes after seeking the Tao, using the Three Treasures leads to a relaxed and focused meditative state. Stress and fatigue are reduced, while the intensity of delta, theta, low alpha, high alpha, and low beta waves significantly increases.

These findings demonstrate the positive effects of practicing the Three Treasures on brainwave activity and mental states, including improved concentration, reduced fatigue, increased relaxation, and enhanced EEG wave intensity under different experimental conditions. The observed brainwave changes consistently indicate that the practice of the Three Treasures contributes to a more stable and focused mental condition.

For future work, the author can add some of the control environmental variables by selecting a setting that is completely quiet, maintains a constant temperature, and features soft lighting. This study focuses on the influence of Yiguandao, Buddhism, and Taoist mantras or mudras on the human body, body, and soul.

7. DECLARATIONS

7.1. About Authors

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7.2. Author Contributions

Conceptualization: HH; Methodology: YC and CY; Software: YL; Validation: YC and YL; Formal Analysis: HH and YL; Investigation: HH; Resources: YC and CY; Data Curation: HH; Writing Original Draft Preparation: YL and YC; Writing Review and Editing: YL and HH; Visualization: YC; All authors, YC, YL, CY, and HH have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7.4. Funding

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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