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運用獨立成份分析法於事件相關電位之腦波訊號比較

Comparisons of EEG signal in ERP Using Independent Component Analysis

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摘要：腦波圖(electroencephalograph, EEG)研究中常用事件相關腦電位(Event-related potential, ERP)之伴隨性負變化(Contingent negative variation, CNV) 觀察腦部反應變化，本研究設計了四個實驗區段；第一個區段：忽略刺激(Ignore stimuli, IS)，第二個區段：按鍵任務(Button mission, BM)，第三個區段：計數閃光刺激任務(Number of flash stimulus mission, NM)，第四個區段：按鍵任務與計數閃光刺激任務(BM and NM, BNM)，進行實驗測量腦波觀察專注度對大腦的 CNV 反應本研究運用獨立成分分析法(Independent component analysis, ICA)分析腦波訊號觀察大腦的 CNV 反應變化。結果發現 ICA 能將位於 CZ 或 FZ 的混合訊號成功的分離取得更準確的腦波原始訊號。

關鍵字：腦波圖、事件相關腦電位、伴隨性負變化、專注度、獨立成分分析法

Abstract：In electroencephalograph (EEG) research, the contingent negative variation (CNV) of event-related potential (ERP) is often used to observe the variations of brain response. Four section were designed in this study to measure EEG signals. The first section is Ignore stimuli (IS). The second section is Button mission (BM). The third section is Number of flash stimulus mission (NM). The forth section is BM and NM (BNM). The purpose of this study is to observe the CNV of brain response in attention by using the independent component analysis (ICA). The results showed that ICA could successfully separate the mixed signals of Cz or Fz to obtain more accurate original brain wave signals.

Keywords: electroencephalograph (EEG), event-related potential (ERP), contingent negative variation(CNV), attention, independent component analysis (ICA)

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新冠疫情下中高齡退休者再就業影響因素之比較

The Comparison of Factors on Reemployment of Middle-Aged and Advanced Age Labors under COVID-19 Pandemic

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摘要：在原有勞動力逐漸老化而青年勞動力遞補不足的現況下，如何引發中高齡及高齡退休者再就業的意願及動機，已然成為人力資源的運用關鍵，亦是須關注的勞動與人力資源議題，尤其是新冠疫情對於中高齡以上退休者的再就業影響性，尚未有足夠的研究進行揭露。就工作動機來看，中高齡及高齡退休者多已滿足馬斯洛需求理論的生理、安全、甚至是社會需求，純粹以財務回報作為刺激條件，似乎已無法充分引發其重返職場的誘因。而從國外文獻的整理及敘述，發現工作意義對於已滿足基本需求的中高齡及高齡退休者，有著更為顯著的激勵影響。故本研究從工作意義角度，切入中高齡及高齡退休者重返職場的動機分析，以計畫行為理論為基礎，引用國外發展的「工作意義量表」為研究工具，透過便利抽樣對已退休之中高齡及高齡退休者進行問卷調查，回收 269 份有效問卷後進行統計分析，其中以北北基人數較多。數據分析方法採取描述性統計以了解受訪者社會背景，再透過差異性分析比較性別、

年齡、教育程度、地區、年資、職級等六個背景變項，以瞭解不同組群在六個研究構面的差異。研究結果發現，工作意義的差異分析呈現達顯著水準，且平均數高、標準差集中，可見工作意義對於中高齡以上退休者再就業有相當的重要性；另政府對於中高齡以上退休者的就業輔助政策和措施，是影響其是否能夠重返職場的重要因素。相關研究結論與建議，提供學術及實務工作者參考。

關鍵詞：工作意義、中高齡者、高齡者、職場、再就業意圖、新冠肺炎

Abstract：The insufficient supplement of the young workforce and on-the-job workers were senescence which caused a shortage of labor force and it appeared in recent years. How to motivate middle-aged and elderly retirees back to the workplace was the key factor of human resource in rearrangement policy. Indeed, it was a critical issue to care about the development of labor forces and human resources. In fact, insufficient study to discuss the effect of the COVID-19 pandemic on the motivation and willingness of reemployment for middle-aged and elderly retirees. It was easy to find, compare to Maslow's Hierarchy of Needs, the middle-aged and elderly retirees are satisfied with the needs of physiological, safety, and belongingness or love. Thus, inspire them back to the workplace only by financial reward was not enough. It was found, based on related literature review, the “meaningful work” plays an essential role to the middle-aged and elderly retirees' motivation of back to the workplace. Therefore, this study stands on the perspective of “meaningful work” to analyze and interpret middle-aged and elderly retirees' motivation for reemployment. The Theory of Planned Behavior (TPB) was employed as the theoretical basis of this study. A developed survey questionnaire from related studies were adopted in this research. Convenience sampling was used for data collection and subjected to middle-aged and elderly retirees in Taiwan. There are 269 in total returned data and the majority returned from Taipei City, New Taipei City, and Keelung City. The descriptive analysis was applied to explore the background of respondents. Further, the comparison of the mean score was used to understand the difference between demographic groups included gender, age, education level, location, seniority, and position. The result shows the “meaningful work” reached the significant level. Further, the mean scores and high centralized standard deviation coefficients of “meaningful work” reflected it was an important factor to influence senior or mid-aged persons’ intention to return workplace. Some comments and suggestions were provided for academic and practice as reference.

Keywords: Meaningful work, senior or mid-aged persons, elder, workplace, reemployment intention, COVID-19.

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利用腦電波特徵控制虛擬實境森林小雞遊戲之注意力訓練場景

Use Brain Wave Features to Control the Virtual Reality Forest Chicken Game in the Attention Training Scene

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摘要:注意力訓練可以在遊戲中透過在腦機介面（Brain Computer Interface, BCI）和 Unity 所結合的平台，使大腦與遊戲中角色直接溝通。本研究設計森林小雞虛擬實境場景遊戲，配合 NeuroSky 公司的單通道腦波儀（MindWave Mobile）來讀取腦電波（Electroencephalogram, EEG）訊號特徵於注意力訓練場景中。受測者為作者本人，透過專注與放鬆冥想來控制森林小雞的行進軌跡，並將演算法歸類完成後的腦波數據特徵作為操控森林小雞左右方向的位置移動來讓森林小雞維持於中線（石頭排列線）上，計算出訓練的正確率。本研究實際測試結果分為

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兩天進行測試而得正確率之樣本，每天平均做十次的實際測試，計算出兩天的平均正確率分別為 69.6%、69.8%，利用 t 檢定計算且 P>α，結論得出森林小雞注意力訓練之虛擬實境遊戲系統是成功的並且對於受測者是方便也穩定實用之系統，未來也希望可以應用於臨床專注力訓練之復健相關研究。

關鍵詞: 腦機介面（BCI）、腦電波（EEG）、注意力訓練

Abstract: Attention training can enable the brain to communicate directly with the characters in the game through the combination of Brain Computer Interface (BCI) and Unity. In this study, the virtual reality scene game of Forest Chicken was designed, and the single-channel brain wave device (MindWave Mobile) of NeuroSky Company was used to read the characteristic signals of brain waves in the attention training scene. The test subject is the author himself, who controls the walking trajectory of the forest chicken through concentration and relaxation meditation, and uses the brain wave data features after the algorithm is classified as the position movement of the forest chicken in the left and right directions to keep the forest chicken. On the center line (stone arrangement line), the correct rate of training is calculated. The actual test results of this study are divided into two days of testing to obtain the correct rate of samples. The actual test is performed an average of ten times a day, and the two-day average correct rate is calculated to be 69.6% and 69.8%, respectively. The t test is used to calculate and P> α, the conclusion is that the virtual reality game system of forest chicken attention training is successful, and it is a convenient, stable and practical system for the subjects. It is hoped that it can be applied to the rehabilitation related research of clinical attention training in the future.

Keywords: Brain Computer Interface (BCI), Brain Waves (EEG), Attention Training.

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土客衝突與環境變遷—以清代閩北開發與士人議論為中心

The Conflict Between Natives and Immigrants and Environmental Changes—Centering on the Development of Northern Fujian in the Qing Dynasty

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摘要：本文討論清代閩北地區建寧、延平、邵武三府的環境開發及士人議論，並指出清代閩北地區的商品經濟發展，受到兩個主要的因素制約。第一、受到環境資源的制約。閩北地區的山多田少，農林墾植不得不往山區開發，過度的墾殖活動，造成水土流失，不但山田受影響，收成因此減少，而且波及山下的水田。於是引起平地農民的反彈與官方的注意和介入，因此使得經濟作物的種植受到了制約與控制。第二個制約因素，則是外部市場的結構性因素。在外需市場的架構下，市場的價格，產品的數量都無法由閩北山區的生產者所決定，市場的價格均由外來商人或包買者所決定。因此，清代閩北地區的商品經濟的發展，基本上受制於生產以外的因素，生產者只是採購商人的代工者，加上生產技術不思改進，一旦有新的競爭者或新商品出現，市場就會拱手讓人。清末民初閩北茶業的快速衰微，可說均受制於這種市場性的結構因素。

關鍵字：閩北、客民、茶葉、清代

Abstract：This article discusses the environmental development of the Jianning, Yanping and

Shaowu prefectures in northern Fujian in the Qing Dynasty and scholars' opinions. The development of the commodity economy in northern Fujian in the Qing Dynasty was restricted by two main factors. First, it is restricted by environmental resources. There are many mountains in northern Fujian and few fields, so agriculture and forestry must be developed in mountainous areas. Excessive reclamation activities have caused soil erosion, which not only affects the mountains and fields, reducing harvests, but also affects the paddy fields below the mountains. As a result, farmers in the flatlands rebounded and the government paid attention and intervened, thus restricting and controlling the planting of cash crops. The second restrictive factor is the structural factors of the external market. Under the structure of the external demand market, neither the market price nor the quantity of products can be determined by the producers in the mountainous areas of northern Fujian, but the market prices are all determined by foreign businessmen or contractors. Therefore, the development of the commodity economy in northern Fujian in the Qing Dynasty was basically constrained by factors other than production. Producers were only subcontractors for purchasing merchants. In addition, the production technology did not want to be improved. Once new competitors or new commodities appeared , the market will give up. The rapid decline of the tea industry in northern Fujian in the late Qing Dynasty and early Republic of China can be said to be subject to this market-oriented structural factor.

Keywords：Northern Fujian、 Immigrants、Tea、Qing Dynasty

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重複經顱磁刺激技術對阿茲海默症治療的研究進展

Advances in Repetitive Transcranial Magnetic Stimulation for the Treatment of Alzheimer's Disease

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摘要：阿茲海默症（Alzheimer's disease，AD）是一種退行性神經疾病，目前尚無治療 AD 的特效藥物，故藥物干預僅提供了次優的益處。AD 的治療方法除藥物治療外，多採用非藥物治療方法包括經顱磁刺激（Transcranial magnetic stimulation，TMS）技術，重複經顱磁刺激（Repetitive transcranial magnetic stimulation，rTMS）是 TMS 的一種重複運用形式。TMS 原理是基於法拉第電磁感應定律，電磁場（Electromagnetic field，EMF）的方式來刺激大腦，這對於作為一種有關大腦的神經退行性疾病 AD 而言十分重要，rTMS 作為一種無創且有效的、可以改善 AD 患者的認知功能、記憶和語言能力的治療方法，這些功能的下降都是 AD 的患病特徵。近年來 rTMS 成為了各種神經退行性疾病的有效治療工具而逐漸得到重視，迅速成為治療輕度認知障礙（Mild cognitive impairment，MCI）和輕、中度 AD 的有效方法，有望代替藥物治療的方法對 AD 患者進行治療。故此探究針對於 rTMS 對 AD 的有作用效果的部位，包括皮質、海馬

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體及突觸等，並通過 rTMS 的各種參數包括刺激強度、刺激頻率、持續作用時間等總結 rTMS 對 AD 刺激、治療效果的影響。在此探討 rTMS 對 AD 的作用部位和 rTMS 各參數對 AD 症狀進程的影響，結果發現高頻率、較高強度、長持續時間對 AD 治療的效果好。

關鍵字：阿茲海默症、非侵入性腦刺激技術、重複經顱刺激技術

Abstract：Alzheimer's disease (AD) is a degenerative neurological disease, and there are currently no specific drugs for treating AD, so drug intervention only provides suboptimal benefits. The treatment methods for AD, in addition to drug therapy, often use non drug treatment methods including transcranial magnetic stimulation (TMS) technology. Repetitive transcranial magnetic stimulation (rTMS) is a form of repeated use of TMS. The principle of TMS is based on Faraday's law of electromagnetic induction, which stimulates the brain through electromagnetic fields (EMFs). This is crucial for AD, a neurodegenerative disease related to the brain. As a non-invasive and effective treatment method that can improve cognitive function, memory, and language abilities in AD patients, rTMS is characterized by the decline of these functions. In recent years, rTMS has become an effective treatment tool for various neurodegenerative diseases and has gradually gained attention. It has quickly become an effective method for treating mild cognitive impairment (MCI) and mild to moderate AD, and is expected to replace drug therapy for the treatment of AD patients. Therefore, this research is aimed at exploring the parts of rTMS that have effects on AD, including cortex, hippocampus, and synapse. The effects of rTMS on AD stimulation and treatment effects are summarized through various parameters of rTMS, including stimulation intensity, stimulation frequency, and duration of action. Therefore, this research is to explore the effects of rTMS on AD and the effects of rTMS parameters on AD symptom process. The results show that high frequency, high intensity, and long duration have good effects on AD treatment.

Keywords：Alzheimer's disease, Non-invasive brain stimulation techniques, Repetitive transcranial stimulation techniques