



POLSKO-JAPOŃSKA  
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*In my PhD, being the result of the work at the Interfaculty Interdisciplinary Doctoral Studies ICT&P - PJATK & SWPS, in the Center of the Neurocognitive Research in the WeedTeam section, my research is focused on the brain activity (with the EEG analysis and verification usage) among marijuana and poly-drug users regarding the cognitive performance and memory maintenance during cognitive/memory tasks.*

## **DISINFORMATION IN THE INTERPRETATION OF EVERYDAY STIMULI. YING-YANG OF CANNABIS**

What is qualitatively selected information and proper communication in the 21st century?

In the face of the multitude of stimuli that bombard a person from almost every side, sometimes causing chaos inside him, it is difficult to clearly recognise this vastness of stimuli. This internalised chaos, which is sometimes frightening and irritating subcutaneously, especially when combined with the rush of everyday life, sometimes affects the internal state of the organism. Regarding also the brain activity as well as brain waves distribution or consequently neurocognitive functioning.

### **DATA BOMBING - ATTENTION OVERLOAD**

Referring to the 21st century vision of the chaos of disinformation and, at the same time, the enormity of data, which seem to overload human cognitive functions affecting the cognitive functioning (especially since data (both actively / consciously obtained, and those independent of us - such as text alerts) are occupying a place in the field of perception). There can be made a symbolic connection between the situation of addiction as well as tauopathies (the condition of beta-amyloid and tau protein aggregations causing a cognitive and functioning impairment).

For example, in the neural aspects of addiction and during the development of neurodegenerative diseases desynchronization of functioning, memory impairment, attention overload, desynchronization of brain activity, as well as difficulty both in emotional control and in making qualitative selection of information seems to be something shared in common.

I will focus on both aspects of marijuana - for recreational purposes and for therapeutical ones - as the same substance in different doses can have opposite properties as well as impact on functioning and cognitive performance).

I will start with the description of endocannabinoid system that serves similar role to the proper coordinator of data selection which could provide, in a social field by sustaining a qualitative data selection; a proper communication leading to the normalisation in the chaos of disinformation.

### **ENDOCANNABINOID SYSTEM**

Endocannabinoid system plays the symbolic role of being the interpretator and coordinator of physiological processes. (The example of it may be presented in the situation of releasing the anandamide during massaging stimulation. Anandamide plays the role of being the endogenous cannabinoid having the properties similar to the exogenous THC. The name of the endocannabinoid system refers to the prefix "endo-", which indicates the occurrence and origin

of cannabinoids also from within the body. Endocannabinoids are long chains of polyunsaturated fatty acids composed of cell membrane phospholipids, in particular arachidonic acid. The two major endocannabinoids are anandamide and 2-arachidonol glycerol (2-AG).

Endocannabinoid system as a network

The endocannabinoid system corresponds directly to the idea of network - due to the fact of its being the organic set of receptors scattered through the nervous system (showing that communication can be considered as a dynamic network of data/memory traces transfer).

The endocannabinoid system is also involved in physiological

processes (e.g. modulating the release of neurotransmitters, regulating the perception of pain, as well as the cardiovascular system, gastrointestinal tract and liver).

**HUMAN ENDOCANNABINOID SYSTEM**

**CB1**  
CB1 Receptors Target

- × Motor Activity
- × Thinking
- × Motor Co-ordination
- × Appetite
- × Short Term Memory
- × Pain Perception
- × Immune Cells

**CB2**  
CB2 Receptors Are Much Broader Than CB1 And Influence Most Of The Body

- × Gut
- × Kidneys
- × Pancreas
- × Adipose Tissue
- × Skeletal Muscle
- × Bone health
- × Eyes
- × Tumours
- × Reproductive System
- × Immune System
- × Respiratory Tract
- × Skin health
- × CNS
- × Cardiovascular System
- × Liver

AMSTERDAM GENETICS

**BRAIN ACTIVITY – ALPHA – THETA – GAMMA**

The proper communication process seems to be also strongly dependant on the brain waves distribution, especially, due to its inner power of affecting the quality of the cognitive processes. That quality can be regarded as a result of "the neural dynamic constellation" of alpha, theta and gamma bands.

The constant interplay between these three bands (but they are not the only important bands in the brain even if they seem to me to make a fluent connection between memory and attention regarding both fields - social and everyday life as well as neurodegenerative one such as properties of the functioning in Alzheimer's disease).

**ALPHA – THETA – GAMMA**

Theta and gamma bands are directly connected to process of memory formation - both with the information processing and information maintenance. Alpha, on the other hand, as well as gamma in a way, is linked to the attention performance. Moreover, alpha is considered to be responsible

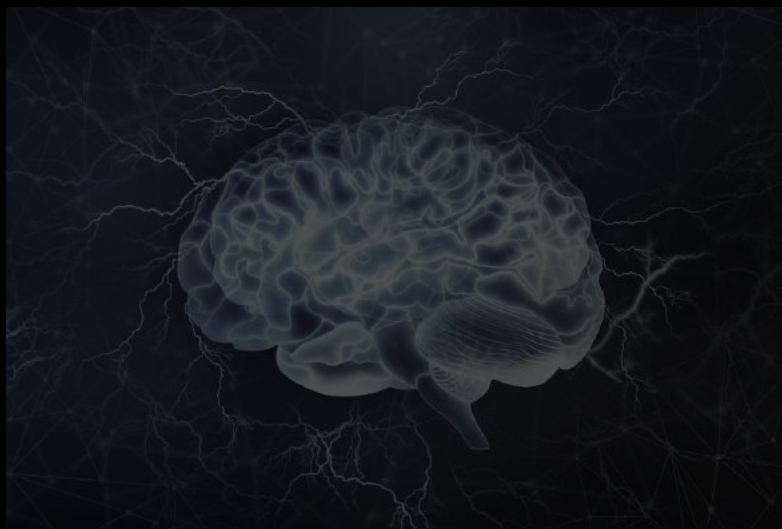




for the process of stimuli selection that will be participating in attentional functioning which will have a direct impact on the communication quality.

#### BRAIN WAVES – MARIJUANA

According to scientific studies, that contradict some assumptions regarding marijuana's impact, highlight the ambiguity of the marijuana usage regarding the quality of functioning, there is visible a direct division between recreational usage and medical consumption.



#### YYING-YANG OF CANNABIS

The results of the researches among marijuana users regarding memory performance revealed that moderate usage does not have as huge impact on memory performance as poly-drug usage.

#### YING - NEGATIVE PERSPECTIVE OF MARIJUANA

However, there are studies highlighting great devastating impact on the cognitive functioning of heavy use of cannabis.

There exists significant knowledge providing that the cannabis use disorder among cannabis users can be approximately 30% (based on clinical diagnostic criteria. This number is similar to drugs such as heroin (25%) and cocaine (36.5%)).



The consumption of cannabis directly targets the body's natural endogenous endocannabinoid system, which comprises the receptors that mediate the actions of cannabinoids, as well as anandamide and 2-AG and the associated enzymes responsible for their synthesis and degradation. The stimulation of cannabinoid receptors by THC initiates a cascade of broad biological events due to their abundant expression throughout the brain and body.

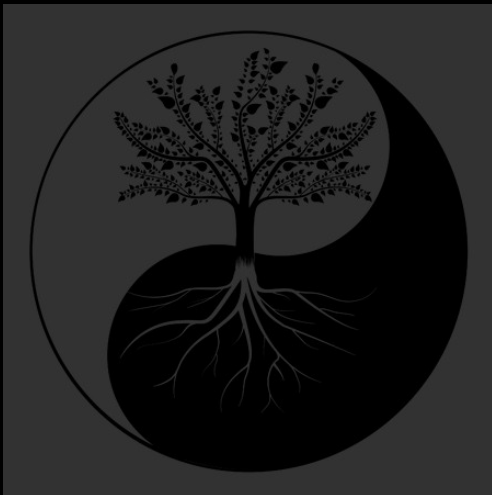
#### – NEUROBIOLOGY

The significant remarks among the cannabis users associated with great risk of psychotic symptoms and the possibility of the development of psychoses support the noxious and harmful effect of cannabis. That particular and harmful significance can be also highlight by the complexity of the hippocampus and this region's role in the regulation of dopamine, participating also in the motivation. It can be pointed out due to the fact that psychoactive drugs are showing the negative neurobiological impact regarding hippocampal structures - cannabis affects excitatory neurotransmission known to regulate hippocampal neural activity and output. It

can be also observed that cannabis have impact on memory alterations, attentional disorders or the motor functioning disturbances regarding the quality of executive functions.

#### **YANG** – IMPROVEMENT OF (ORGANIC)DATA SELECTION

Despite of the observation of negative consequence/impact of marijuana there are numerous studies highlighting the beneficial impact of marijuana in case of treatment. Showing that the same substance in different health condition (in case of disease and not during healthy development) can provide the result analogical to “the turning back time” with direct improvement of (organic)data selection. There can be observed a reduction in numerous symptoms and (as in the case of drug-resistant epilepsy) normalization of brain wave activity, accompanied by a significant reduction in epileptic seizures. The normalization of the distribution of connexin 43 and beta- amyloid protein shows a significant therapeutic potential in Alzheimer’s disease - and in diseases accompanied by the neuroinflammatory process or brain waves abnormalities.



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*The research concerning the verification of brain activity among marijuana usage was carried out in the ICT&P doctoral program making the link between new technologies/IT tiles with the neurocognitive performance.*

<https://web.swps.pl/davinci/315-opisy-kierunkow/warszawa/studia-doktoranckie/17281-ict-and-psychology>