

The Integrated Multi-Factorial Interaction of Humans in Their Behavioral World



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Mini Review

In his writings, Plato spoke of the world as if it were a live big animal. This big animal has a soul that envelops it and makes it alive. Since from our beginning, the myths of creation, which have been handed down to this day, represent the world set up and animated by mythological figures who, destined to govern it, affect the lives of humans, aiding or impeding people with illness and healing. Jung also argued that these myths reside in our psyche, in the collective unconscious or in the species, and present themselves to us in the form of pathology [1-5]. According to Jung, myths are the basis of understanding pathology, because every psychopathology has its myths of creation, its ancestral precursors, which manifest themselves through disease. The same Jung, after M Ficino [6-10], has theorized that psyche is not inside the body, but the body is inside psyche [11-16].

This affirmation forces us to admit that there are life and energy all around us. The tendency to «paint» a man, living in an inanimate context, has excluded everything we call environment and even more, the World [17-21]. By focusing our attention on the assertion that supports the uniqueness of every human being and using the point of view of genetics, we would say that during the meiosis, after the duplication of chromosomes occurred, and before the first cell division occurs, the chromatids of each tetrad, exchange DNA portions, quite randomly; this process takes the name of Crossing Over or Recombination [22-29]. Then in each meiotic division, the chromosomes of each tetrad are randomly distributed among the newly formed daughter cells [30-35].

Thanks to these two processes, the DNA content of the original precursor of sexual cells is redistributed between gametes produced by meiosis, egg-sperm, in a potentially infinite number of different combinations. The likelihood that a person produces two identical gametes by genetic content is practically non-existent [36-42]. In addition, is certainly possible assert that genes influence the body's development through, and only through, their influence on protein production. Whatever is the level at which an organism is analyzed, from

the biochemical to the behavioral one, the effects of the genes are intimately interwoven with the environmental effects. The term environment, in the context of genetics, indicates every particular aspect of an individual and of all that surrounds it, excluding only genes [43-46].

The environmental effects are able to «ignite» (activate) or «turn off» (inactivate) the genes, leading to organic changes that modify the behavior of the individual. The psychic relationship proves not only introspection or the relationship between two people but between people and everything. A very interesting story about it is described by S.N. Young, who also provides us with four methods to increase the level of serotonin in the human brain without the use of drugs. Serotonin may be associated with physical health and mood. Non-pharmacological methods to increase brain serotonin may not only improve the mood and social functioning of healthy people but also allow verifying the idea that increases in brain serotonin can help protect people against the onset of various disorders both mental and physical. In a recent study, meditation has been able to increase the release of dopamine Perreau-Linck et al. [47-50]. The study, the first also to point out that self-induced mood changes may affect serotonin synthesis.

This increases the possibility that the interaction between serotonin synthesis and mood may be two-way, with the serotonin influence on mood and mood on serotonin. Exposure to brilliant light is a second possible approach to increasing serotonin without drugs. Brilliant light is, of course, a standard treatment for seasonal depression, but some studies also suggest that it is an effective treatment for non-seasonal depression and also reduces depressed mood in women with premenstrual dysphoric disorder, and, in pregnant women affected by depression [51-57].

In the postmortem human brain, serotonin levels are higher in those who died in the summer than those who died in the winter. There was also a positive correlation between the

synthesis of serotonin and the sunlight hours during the day in which the measurements were made, regardless of the season. In humans, there is certainly an interaction between light and serotonergic system. The mood reduction effect of acute tryptophan depletion in healthy women is completely blocked by performing the study with bright light (3000 lux) instead of low light [58-60]. Various research lines suggest that exercise increases the function of brain serotonin in the human brain. For example, Chaouloff and colleagues have shown that exercise increases tryptophan and 5-HIAA in rat ventricles [61-63].

Recent studies have shown that exercise increases extracellular serotonin and 5-HIAA in various areas of the brain, including hippocampus and cortex. Motor activity increases the use of serotonin neurons, and these results in increased release and synthesis of serotonin itself. In addition, there is an increase in tryptophan brain a precursor to serotonin that persists even after exercise. The fourth factor that could play a role in increasing cerebral serotonin is diet. According to some evidence, tryptophan, which increases brain serotonin in humans as in experimental animals, is an effective antidepressant in mild

to moderate depression. In addition, in healthy people with a high level of irritability, increases appetite, decreases disputes and improves mood [64-67].

If in the analysis of psychopathology, it is normal to recognize a strong emotional expression, as a distinctive feature of lives, and of personal and social problems related to it. It is well established that cognition in humans while being aware of the variability due to the multitude of individual and contextual particulars, shows daily fluctuations with changes in the circadian phase and in body pressure during sleep [68-72]. The physiological impact of seasonal changes, well-characterized by animals, remains largely unexplored on human cognitive brain functions. In a transverse study conducted in Liege Meyer et al. [73], in a laboratory with 30 volunteers under constant environmental conditions, the influence of seasonal cyclicity on the cognitive brain was tested. Significant effects were found in frontal and frontopolar regions, on insula and thalamo, with a maximum response at the end of summer and a minimum response at the end of winter (Figure 1).

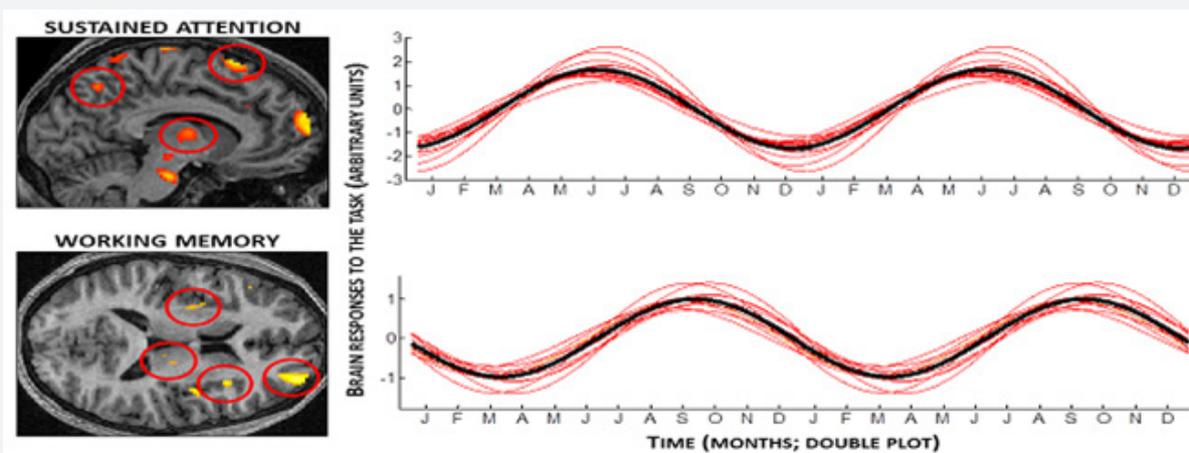


Figure 1: Sensational variations of brain responses for the realization of two cognitive tasks, one of sustained attention and the other of working memory.

These brain areas are key areas for executive and supervisory control. The results constitute the first demonstration that seasonality directly affects the cognitive functions of the human brain. Scientists M.Gallio et al. [74] By reproducing in laboratory in a sophisticated room where were controlled humidity and temperature levels, using blowing air and heated tiles, have reproduced the outdoor habitat of fruit flies, discovering and eliminating the single type of cognitive neuron that simultaneously send and receives signals from peripheral receptors, and which helps the fly to recognize dry air, warm air and moist hot air. Thus, fruit flies have lost their ability to determine the combined danger of dry heat and warm air. The neuronal organization of the mosquitoes would thus be able to construct a thermal environment map, thus controlling space and movement in a functional and safe manner, a clear

interconnection of continuity between the insect brain and the environment [75-79].

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