Meditation and Neuroscience

Mental Silence benefits your brain.

- *Meditators showed around 7% more grey matter, the largest published difference between healthy groups.*
- *As grey matter decreases with age and with most mental illnesses, this difference throughout the brain is associated with a younger and healthier brain.*
- *The grey matter difference was more marked in areas related to the control of attention and emotions.*

An investigation on the influence of mental silence in the human brain has just been published in the magazine Plos One. The article is entitled: “Larger whole brain grey matter associated with long-term Sahaja Yoga Meditation: a detailed area by area comparison”. The original text is available at the following link: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0237552

It is said that, for more than forty thousand years, human beings have a language that allows us to communicate with precision, that language is reproduced within our brain as thoughts without interruption. When negative thoughts are repeated in vicious cycles, our mental health can be affected with issues such as stress, anxiety or depression.

Today there is plenty of scientific literature that shows that being with the attention in the present moment, in the here and now, is beneficial for our psyche and our general health. Unfortunately, thoughts take us out of the present moment and to stop the thoughts for a long time is not easy, especially when we are not doing tasks that demands much attention.

Yoga includes many different techniques, among which meditation (Dhayana in classical yoga) plays a leading role. The first yoga treatise, "The Yoga Sutras of Patanjali", mentions that "yoga is the suppression of the modifications of the mind." In ancient yoga a higher state of consciousness has been described, called “Nirvichara Samadhi”, which can be translated as "mental silence" or "thoughtless awareness". In this state, the mind is calm, with a feeling of inner bliss, and with the attention focused on the present moment. Sahaja Yoga Meditation puts into practice the goals of classical Yoga to achieve the state of Nirvichara or mental silence.

Researchers led by Professor Sergio Elías Hernández from the University of La Laguna in Tenerife (ULL), in collaboration with scientists from King’s College London University, Jaume I University of Castellón and Sermas of Madrid, have been exploring for more than ten years the benefits of the state of mental silence on the human brain.

The study was carried out at the ULL MRI scanner, where the researchers recorded the brain anatomy of 23 meditator volunteers, experts in Sahaja Yoga meditation, and 23 non-meditating volunteers. Both groups were made up of

healthy volunteers and both groups did not differ in age, educational level, ethnicity, proportion of men and women, etc.

To better understand this study, we must mention that the brain tissue is classified, according to its appearance, into three types: grey matter, made up of neuronal bodies and interconnections, (dark grey in resonance images); the white matter, formed by nerve fibers or long connections between distant areas, (light grey in the resonance images), and the cerebrospinal fluid or watery substance that fills the interior voids and serves as protection and transport of chemical substances.

The study of brain anatomy showed that meditators had, on average, 7% more grey matter in the whole brain. This type of comparison of the grey matter of the brain has been made in recent years among other groups in: athletes, musicians, taxi drivers, Buddhists, mindfulness meditators, etc. In these cases, the analyses showed that the group studied had local differences, greater grey matter, in brain areas associated with their specific practice, but the difference was never in the whole brain as it is the case with mental silence. The difference of 7% larger grey matter is especially significant if one takes into account that our brain loses between 0.15% and 0.3% of grey matter per year and small differences in grey matter can mark whether or not we keep intact our cognitive functions. It should be also noted that diseases, typical of the elderly, such as Alzheimer's, senile dementia or Parkinson's are also associated with loss of grey matter.

An advance of this study was published in the same journal Plos One in 2016, but the available methodology did not allow a detailed study to be made to see how the grey matter differences were distributed in the different areas of the brain. Given the uniqueness of the group differences observed throughout the whole brain, the researchers had to develop a specific statistical method (ad-hoc) to be able to evaluate these differences, area by area. Of all the brain areas, the grey matter difference was significantly larger in meditators in the right temporal lobe, an area associated with emotions, and in both frontal lobes, areas associated with cognitive and emotional self-control functions.

In conclusion, the study findings show that mental silence, experienced through Sahaja Yoga meditation, is associated with a protective effect on the entire brain, by leading to larger overall grey matter that could potentially reflect a slowing down of age-related loss of grey matter. The areas where these differences were most noticeable were those that are crucial for the control of attention and emotions. Since grey matter diminishes with age and with many mental illnesses, this difference throughout the whole brain could suggest a younger and healthier brain for those practising mental silence.

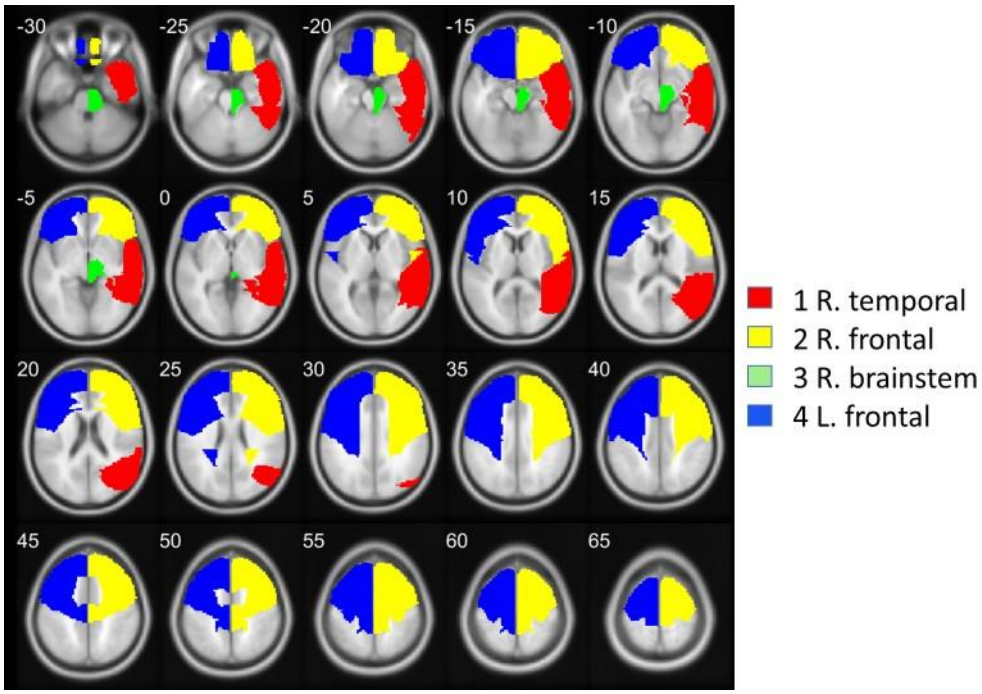

Figure. Brain lobes areas with significant different in grey matter between groups, in the order of 1 to 4, following statistical significance.

Study authors: Sergio Elías Hernández[a*], Roberto Dorta[b], José Suero[c], Alfonso Barros-Loscertales[d], José Luis González-Mora[e], Katya Rubia[f]

a: Departamento de Ingeniería Industrial, Universidad de La Laguna, Tenerife, Spain.

b: Departamento de Matemáticas, Estadística e Investigación Operativa, Universidad de La Laguna, Tenerife, Spain.

c: Centro de Salud Jazmín, Sermas, Madrid, Spain.

d: Departamento de Psycología, Universitat Jaume I, Castellón, Spain.

e: Departamento de Fisiología, Universidad de La Laguna, Tenerife, Spain

f: Institute of Psychiatry, Psychology and Neuroscience, King's College, Londres, UK.

*Author for more information:

Email: sehdez@ull.edu.es