

THE MIRROR NEURONS AND THE NEUROPHYSIOLOGY OF MODESTY

Hypothesis / aims of study

The human brain is a flexible multifunction system that it has, to the base a system of neuronal interrelations with specific function that can be activated or inhibited, generating high plasticity of the integration systems that are involved large cerebral areas. Recently they have been evidenced the specific functions of the so-called the "Mirror Neurons" that they concur a fast shape of learning that leads to an adaptive behavior. The neurons mirror, have supplied us one new interpretation key of the inhibitory or facilitatory reflex that integrate the micturition and that they constitute in all or partially the philosophical concept of decency. The study was performed in the most 'wide of draft Functional Brain Imaging and seeks to identify through functional magnetic resonance (fMRI) to the seat of the brain areas involved in what is called decency.

Study design, materials and methods

Were selected 19 healthy volunteers, 11 males and 8 females with age range between 19 and 26 years. The volunteers were recruited from the campuses of three European University The people eligible to study agreed to undergo prior to a psychiatric evaluation to highlight the presence of any abnormal psychological profile of sexual and emotional sphere. Since then they have been subjected to urological screening, which provided a urinary echography, a uroflowmetry and normal laboratory tests, including urine culture. Following were submitted to neurological evaluation and one EEG with activation Stroboscopic to highlight any epileptic focus or more general states of cortical irritability. The volunteers have been found suitable were submitted to a functional Nuclear Magnetic Resonance (fNMR). (Philips Multiscan equipment for all the centers). An initial brain scan was performed during retirement and empty the bladder. A second scan was performed while they were in widespread impulse sound which repeated the flow of water. In a third sequence was shown on the video screen through oblique images evocative of micturition. Finally, when the volunteers reported the appearance of a stimulus micturition initial sets were repeated the evocative visual and audible to highlight the motor areas activated for Blood oxygen level dependent (BOLD) and located using the three dimensional system called Voxel. Were subsequently introduced into the sets visual and acoustic which generally inhibit urination.

Results

The high cost of the methodology of the study, but divided among the three centers of Neuro Urology and with the help of Philips International Foundation has prevented you can recruit a higher number of volunteers and then the data obtained can not be validated by large numbers. But the imaging data in our possession show great similarities between them. The topographic data derived from f.N.M.R. not show significant differences between the sexes, has no statistical significance, the range of age. A matter of great interest, as recorded in all the nineteen volunteers, is a substantial differentiation sites BOLD activated after administration of inputs acoustic or visual stimulation. In fact, these centers are identified with the Voxel system as facilitators spots in brain areas of the occipital region near the floor of the fourth ventricle, whereas the centers evoked by visual impulse, the inhibitors are activated in the area F5. A interesting data is to note that the motor areas are activated simultaneously in the two cerebral hemispheres and are symmetrical. And 'well known that even the powerful are seemingly irrational impulses facilitators generated by acoustic or visual inputs related to water that flows that are generated inhibitors impulses of micturition if someone or something (even the presence of a uroflowmeter) is present or generate noise at the time of the micturition. The mirror neurons appear to preside over the distinction between simple and engaging events engines without goal, and the understanding - recognition of action. In fact these specialize behind the educational impulses induced by adults (Tab I).

Conditionings :

Energetic : caress / slap ;

Verbal : you can not marry you / living the dream of parents ;

Of Duties: You must look / You must obey

Of Guilt: The mother does for you / Mom will tire ;

Emotional : love / no love

Psychological violence: do not do it if the mother does not want you more

For comparison: See what other kids do

Competitiveness : must be the most clever

Interpretation of results

The achievement of continence is therefore little reason for gratification of a sense of belonging to behavioral patterns. But from how on developing a parallel sense of inadequacy, guilt in the case of episode of incontinence is paradigmatic the social behavior of enuretic children and usually of all patients suffering from disorders continence towards socialization. The objectivation of the involvement of mirror neurons in the F5 and the occipital area, the inhibitory activity of the bladder is reinforced but looks even more 'interesting is how the activation occurs simultaneously and with equal intensity on both brain hemispheres.

Concluding message

These initial data prospects of rehabilitation and therapeutic applications of great importance. But the appearance, perhaps more interesting is that you can assume that they have displayed some of that sense in which our civilization is called modesty.

References

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<i>Was this study approved by an ethics committee?</i>	Yes
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<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes