The Neural Correlates in the Presumed Extrasensory Faculties of the Medium and in the Perception on the Sacred

Keywords: Psychology; Neuroscience; Neuropsychology; Brain; Prefrontal cortex; Temporal lobes; Frontal lobe; Limbic System; Pineal gland; Paranormal faculties; Extrasensory faculties; Perception of the sacred; Medium

Abstract
Starting from dozens of studies on neural correlates during mystical experiences and the use of extrasensory skills from the common sense, I proceeded to contextualize in a more scientific way the concept of extrasensory mediums and faculties, then analyzing the state of the art in relation to discoveries in the neuro scientific field concerning precisely the alleged extrasensory faculties possessed and the perception of the sacred in the subjects of the researches so far evaluated. From this examination there emerges a direct involvement of the cerebral areas of the frontal and temporal lobes and in general of the circuits connected to the limbic system. This thematic research has deepened the object of study concerning the phenomena of subjective perception; however, in the last part I proceeded instead to suggest a research-oriented research scheme not so much of the subjective profiles already known as much as the hypothesis of the existence of the entities perceived by the mediums, therefore an objective profile, in order to better know the external context of the medium.

Introduction
The figure of the medium and the presumed extrasensory faculties

The medium is a subject with apparently controversial psychic abilities, as it would seem to be able to communicate telepathically and physically with the different spirit entities present on the astral plane, or a plane parallel to the physical one. The occult tradition relates that these abilities are insistent in every human being and only certain people are able to free their own energy flow, to concretely reach the state of connection with the plane where these entities are present.

From a scientific point of view, of course, these assumptions become mere speculations, the result of superstitions and personal convictions of some subjects who, using their mental manipulation and credibility skills, manage to make people believe what they want, especially if the victims are prone to religious beliefs and easy credulity.

Extra sensory perceptions are called in different ways depending on their nature:

1) Ability to predict the future (precognition);
2) Ability to visually perceive things that are not naturally visible (clairvoyance);
3) Ability to communicate with thought (telepathy).

The field of study of extra sensory perceptions (and other alleged paranormal manifestations such as psychokinesis) is called parapsychology. The person believed to possess such faculties is called an esper or a psychic (also a paragnost, especially if connected to retro cognition; a medium, on the other hand, who claims to communicate with spiritual entities, such as the dead, for example).

The debate on the existence or not of extra sensory perceptions is very heated. On the one hand, supporters of the existence of these phenomena bring some research to support their theses, on the other significant doubts are raised about the methodological validity of these studies. More particularly if on the one hand parapsychologists affirm that certain experiments such as ganzfeld experiments show evidence of the existence of extra sensory perceptions, on the other hand the scientific community disputes these experiments seriously lacking in rigorous scientific method as well as a solid theoretical basis.

On the basis of this premise, in the academic and research fields, there have been several studies that have tried to demonstrate the inconsistency of the paranormal phenomenon: mental disorders, epileptic forms and alterations of the electromagnetic field are the causes usually given. And yet, in some cases, these deep-seated beliefs have faltered.

It is the case of the Brazilian research by Dr. Moreira-Almeida et al. [1], conducted on one hundred and fifteen mediums and their state of mental health, in order to demonstrate the psychopathological component than the average of the population: this prejudice, however, seems to be denied, having found that the sample submitted to the study have a high partner level educative, a low probability of mental problems and a good integration in society compared to the rest of the population.

Attention then shifted to the state of trance that the medium lives during contact with the alleged spirit entity, or that mental condition typical of dissociations, when a lack of integration between consciousness and the other cognitive processes arises (memory, emotions, ...): also in this case, according to the research of Dr. Peres et al. [2], focusing however on the moment related to psychography.
In the wake of the latest theses, or dissociation in a general sense, another research, conducted by Dr. Wahbeh and Dr. Radin [5], however, showed that people who report experiences of medium ship have higher scores of symptoms of dissociation compared to the non-average, but still below the thresholds for pathological dissociation.

The results instead obtained from the research conducted by Dr. Beischel and Dr. Schwartz have really brought to light something very interesting [6]: it seems that some mediums can receive accurate information on deceased individuals, but not according to the classical telepathic scheme, as more the survival of consciousness (the so-called continuous existence, separated from the body, of the consciousness or personality of an individual after physical death) and the super-ESP (the so-called recovery of information through a psychic channel or a quantum field).

A detailed study on the electromagnetic interaction of these subjects with the surrounding environment is therefore urgently needed. Research partially carried out by Dr. Persinger but not completely completed [8]: a total of six hundred and one reports (with experience over a period of about seventy years) of paranormal experiences concerning death were differentiated according to traditional labels: telepathic phenomena, precognitive and postmortem. The two hundred and thirty two telepathic experiences occurred during 24-hour periods in which the global geomagnetic activity was significantly less (more silent) than in the days before or after the experiences; this relationship was not shown by the one hundred eighty-six precognitive cases or two hundred and three postmortems. The main daily differences in geomagnetic activity for the three classes of experience were equivalent to a correlation of about 0,35. Although content analysis suggests that nocturnal psi experiences and temporal lobe epilepsy may share a similar mechanism, different classes of subjective psi experiences may not be affected by the same stimuli.

Finally, Dr. Claus came to the conclusion that the spirit phenomenon has its own existential dignity [8]: in particular, it has argued that the phenomenon of spirit possession is considered in relation to the broad cultural context in which it is found to exist, in a region of southern India. The author critically criticizes various attempts to explain the possession of the spirit as an exclusively psychological or sociological event; instead, it addresses the cults of medium ship, oral traditions and social ideology for an ethnographic interpretation.

The theme is therefore still to be studied: little and nothing is known about this mystery

a) Despite the studies of Dr. Alexander [9], it is not clear if the ESP phenomena are to be attributed to the right (predominant) or left hemisphere, or depend on factors related to more areas present in both hemispheres. In particular, the author argues that: For over a century, evidence has been pointed to that the two cerebral hemispheres of the human brain each tend to have their own behavioral specializations. An issue that has long been of interest to parapsychologists is whether the ostensibly

Anomalous behavioral phenomenon of “Extrasensory Perception” (ESP), in which a person seems to obtain veridical information about other people, objects, places, events beyond the range of the body’s sensory-motor system, may be a specialized function of either of the brain hemispheres. To address this issue, a review of parapsychological experiments designed to explore the potential relevance of cerebral lateralization to ESP performance was initially conducted by Brought on in 1983. He generally concluded
that although here was some indication of a contribution to ESP by
the right hemisphere, results were mixed and possibly confounded by
issues of interpretation. In a more concise review conducted in 2002,
Alexander found that a limited number of experiments continued to
indicate a right hemispheric tendency, although certain others
separately indicated left hemispheric involvement. Thus, the issue
is still clearly unresolved. This paper seeks to build upon these two
reviews by experiments that have been conducted up to the present
time. Although several experiments continue to offer modest support
for a right hemispheric contribution, general interpretation of the
current database remains hindered by a wide degree of variability
in experimental methods and outcomes, potentially confounding
factors, and the scarcity of additional clarifying data. Thus, while
the issue remains unresolved, there are some potential avenues for
progress in future experiments;

b) Persinger demonstrated with dozens of researches [10],
between the 50s and 60s of the last century, that there was a direct
connection between hallucinations and temporal lobes (in the
left there is the sense of the Self, while in the right there is another
external self, precisely the entity, as there was between the mystical
and religious experience and the limbic system. Ramachandran
then came to the conclusion that the temporal lobes were the seat
of religious experiences (in particular the right temporal lobe, for
Morse) [10]; of different opinion were Newberg and D’Aquili who
focused on the parietal and frontal lobes [10], while Joseph valued the
importance of the amygdalas a transmitter of God [10].

c) Despite contributions on ESP by Joire (1892), Rhine (1884,
1930), Persinger (1950-1960), Mitchell (1971), Honorton (1974),
Schmeidler (1988) and Bem (2011) [11], and the unbelievable
intuition of various researchers that perhaps the answer to psi
phenomena can be found in junk DNA there are no scientific research
oriented towards the existential hypothesis of the spirit phenomenon
[12-17], studied through field data related to temperature and
electro-magnetism, or brain scan during the episode of telepathic
connection with the entity. It seems really strange that no scientific
research has been concretely oriented towards the hypothesis of
hallucinations caused by electromagnetic alterations, except for the
studies of Persinger on sacred places and the recent Dr. Blanke on the
sensation of perceiving a presence (FoP, feeling of presence) [10,12],
demonstrating the involvement of 3 brain regions: the temporoparietal
cortex, the insular or insular cortex and the fronto-parietal
cortex. The data obtained help to understand how these illusory
experiences are mediated by altered perceptions concerning the
origin and identity of the sensorial and motor signals (in particular,
those of a tactile, proprioceptive, motor nature) of one’s own body.
These results provide a framework of probable neuronal mechanisms for
the FoP experience, for the generation of the experience of the “self”
and of the “others” and constitute an advance in the understanding
of brain mechanisms that induce hallucination phenomena in
schizophrenic patients.

Precisely on this last point, interesting research, like that of Dr.
Figner [11], showed instead how low-level electromagnetic fields
manage to alter self-control and the sense of morality, while other
researches have demonstrated how these fields are able to negatively
interfere with the physiological functions of the organism, from

The Perception of the Sacred According to the Human Brain

An interested comparative study on the theme “the search for
the spirit in the brain” was carried out a little less than a decade
goby a group of researchers: << [...]] The search for the brain bases of
spirituality, mystical experiences and religious sentiment has now
a long tradition, but only in recent years have real progress been
made in the definition of neuro functional correlates of the mental
states studied. The recent development of this field of investigation
has assumed such proportions and characteristics as to induce mere
searchers to ask to recognize it as an independent discipline, for which
two possible names have been proposed, each of which has already
raised objections and criticisms: Neuroteology and Neuscience of
the Spirit. Among there searchers, the idea that these studies can
be directed to a therapeutic purpose seems quite widespread: the
identification of the processes that generate well-being in religious
experience should be followed by the development of methods and
techniques to induce them independently of it. (...) Some agnostic
researchers believe that the neurobiological processes responsible for
the affective-emotional state that characterizes mystical experiences
are at the origin of religions. In other words, for them all religious
culture would be nothing but literature, philosophy and art developed
as a result of unusual or frankly pathological experiences that have
affected distant ancestors and that still today affect many people’s
brains. It is understood that for these scholars the definition of the
neuro functional profile of a mystical experience is equivalent to
deciphering the biological origin of the sacred and the divine in terms
of a functional minority or pathological stereotype, therefore it is not
surprising that they may be tempted to neglect individual differences
and “neutral” brain activity, emphasizing the datum approaching
pathological findings. On the contrary, it can be noted that among
believers, especially Christians of Catholic confession, there is the
risk of an under estimation of the role of the mystical experience and
therefore of the brain processes connected to it, because according to
the Magisterium of the Church such experiences do not they are in
themselves a guarantee of a spiritual condition of closeness with the
divine, if not under certain precise conditions, and at the most they
can be considered part of a constellation of physiological events at the
base of the multiple psychic aspects of a faith. Among there search ers
openly atheists then, there are those who, as we will see later, with the
ill-concealed intent to prove that every super natural instance can be
traced to the activity of a group of neurons, look for a hypothetical
“God Spot”, i.e., an area in which a function corresponding to the
divine is located in the human brain [...] >> [18].

On this basis, the aforementioned researchers have done an
extraordinary synthesis, with emphasis on some aspects that we will
see in detail [19].

The temporal lobes

The general view, in the past was to consider any paranormal
experience as the fruit of a pathological condition, in particular a
temporal lobe epilepsy, crystallizing the union of epilepsy-visions
in psychiatric treatises already from the end of 1800. In 1975, in
fact, neurologist Dr. Norman Geschwind described a clinical form
demonstrating the involvement of 3 brain regions: the temporo-
parietal cortex, the insular or insular cortex and the fronto-parietal
cortex. The data obtained help to understand how these illusory
experiences are mediated by altered perceptions concerning the
origin and identity of the sensory and motor signals (in particular,
those of a tactile, proprioceptive, motor nature) of one's own body.
These results provide a framework of probable neural mechanisms for
the FoP experience, for the generation of the experience of the "self"
and of the "others" and constitute an advance in the understanding
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schizophrenic patients.

Precisely on this last point, interesting research, like that of Dr.
Figner [11], showed instead how low-level electromagnetic fields
manage to alter self-control and the sense of morality, while other
researches have demonstrated how these fields are able to negatively
interfere with the physiological functions of the organism, from
the immune system with circadian system, regulated by melatonin,
produced by the epiphysis or pineal gland (the so-called third eye
for western and eastern esoteric traditions) of one's own body.
The starting hypothesis is therefore to demonstrate the real
existence of the spiritual phenomenon understood as a projection
of the unconscious capable of reactivating extra sensory faculties
different from those known and dormant in the individual under
investigation.

Compared to the second point, the reality under consideration is
certainly known and knowable, as shown by dozens of scientific
researches and by thousands of essays written on the subject of
parapsychology and sociology. From these profiles we exclude the
theses sustained in esoteric works and in occult traditions, too tied
with robust scientific evidence, taking note of all the parameters of
analysis at the time of contact with the alleged entity.

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to subjective evaluations often without foundation or modulated
according to logics of superstition and ritual magic. The main
objective with respect to this second point is to demonstrate the
consistency or otherwise of the paranormal spirit is tic phenomenon,
with robust scientific evidence, taking note of all the parameters of
analysis at the time of contact with the alleged entity.

The hyperactivity of the pre-frontal cortex

Researchers Andrew Newberg and Eugene d’Aquili: << [...] studied
the brains of Buddhist practitioners, using Single Photon
Emission Computed Tomography (SPECT), (...) The results of the
study are based on the results of the study of radio nuclide images
by neurons. In fact, the distribution of radionuclide in the brain
presented a completely particular configuration, characterized by a
sudden drop in activity in the vast area of the parietal lobe, associated
with a functional increase in the dorsolateral, frontal and orbital
prefrontal cortex, as well as in the thalamus and around the track. (...) The hyperactivity of the pre-frontal cortex has been interpreted using
its well-known importance in attention, planning and cognitive asks
that require concentration [...]>.

A. possible research hypothesis

The research, object of the present project proposal, focuses on
the resolution of four main questions:

1) The ontological profile, linked to the question: does the reality
in question exist objectively?

2) The epistemological profile, linked to the question: is the reality
under examination known?

3) The methodological profile, linked to the question: is the reality
under consideration measurable?

4) The axiological profile, linked to the question: is the reality
under consideration worthy of study?

Compared to the first point, it is undeniable that the reality under
examination has no official recognition by the scientific community,
supporting rather the majority orientation of the evidentiary
inconsistency. On the other hand, it could not be otherwise, as
the research conducted so far has never taken into consideration,
at the same time, the different points of view of the paranormal
phenomenon. The present research therefore wants to emphasize
not only the neuro-scientific aspect but also and above all the
environmental context according to the laws of physics today known.
The main objective with respect to this first point is to demonstrate the
consistency or otherwise of the paranormal spirit is tic phenomenon,
with robust scientific evidence, taking note of all the parameters of
analysis at the time of contact with the alleged entity.

The starting hypothesis is therefore to demonstrate the real
existence of the spiritual phenomenon understood as a projection
of the unconscious capable of reactivating extra sensory faculties
different from those known and dormant in the individual under
investigation.

Compared to the second point, the reality under consideration is
certainly known and knowable, as shown by dozens of scientific
researches and by thousands of essays written on the subject of
parapsychology and sociology. From these profiles we exclude the
theses sustained in esoteric works and in occult traditions, too tied
to subjective evaluations often without foundation or modulated
according to logics of superstition and ritual magic. The main
objective with respect to this second point is to make the analyzed
reality accessible to the whole public in a coherent, linear and
concrete way, eliminating a sociological influence linked to the world
of occultism.

Compared to the third point, the research aims to make the
reality under consideration measurable, according to the parameters
indicated in the next paragraph, dedicated to the description of the
research. The main objective with respect to this third point is to find
certain data, objectively measurable and reproducible, each time with
the same result, so as to shed light on the spirit phenomenon.
The research hypothesis proposed here relates more to a survey profile linked not so much to the extrasensory faculties and uchastotheyhypothesisofthereveryexistenceoftheperceivedbysubject: in practice, it is suggested not to investigate so much the neurobiological functions during mystical experiences (subject already discussed in the academic field) as much as to deepen the theme of the corporeal existence of the entities that are theoretically perceived by the mediums and more generally by all those subjects with high sensitivity and predisposition to the mystical belief.

The research hypothesis is structured in six phases

The first phase of the project will be focused on the preparation of the doctoral student and the technical personnel involved, including a plan of subjects to be studied, such as: neurobiology, psychology of cognitive processes, neurology, principles of neuro-sciences, psychometry, statistics basic and data analysis, biology, chemistry, biochemistry, basic physics and medical physics.

The second phase of the project will be oriented to the selection of the sample and the technical staff to be used in the research. In particular, the sample will be composed of nos thirty subjects, nos fifteen male, nos fifteen of female gender, of an analogical age not less than eighteen years. The anonymity of the individual participants will be guaranteed. Such subjects must submit to:

a) A clinical and neuropsychological assessment, to ascertain any previous pathologies and the use of certain drugs. Only those who do not have full psychiatric pathologies (eg psi-so, depressive disorders, schizophrenia, personality disorders, etc.) will be selected or take drugs for acute or chronic therapy of the same or which may affect the normal cognitive functions (condition A).

b) An instrumental evaluation using EEG (electro encephalon-spelling), such astro ascertain any pre-entry morbid conditions, such as to interfere with normal cognitive functions. Only those who do not have over neurological pathologies (eg hematomas, benign or malignant tumors, scarring processes, vasculopathies, degenerations of the cortex, epilepsies, etc.) or physiological alterations still considered normal (eg expansion of the cistern magna without further alterations, ...) (condition B).

c) An instrumental evaluation using f MRI (functional magnetic resonance), such astro ascertain any previous morbid conditions (in a complementary manner with the results of the MRI), capable of interfering with the normal cognitive functions, studying brain function. Only those who do not present overt neurological pathologies (eg hematomas, benign or malignant tumors, cicatricial processes, vasculopathies, cortical degeneration, epilepsy) or functional physiological alterations considered normal (eg enlargement of the cistern a magna without further alterations) (condition C).

d) An instrumental evaluation using TMS (Tran’s cranial magnetic stimulation), such as to as certain any functional modifications following the magnetic impulse introduced. Only those who do not have established neurological pathologies (eg hematomas, benign or malignant tumors, scarring, vasculopathies, cortex degeneration, epilepsy) or functional physiological alterations considered normal (eg extension of the cisterna magna) will be selected without further alterations) (condition D).

e) The formal written declaration in which the interested party assumes the responsibility of affirming his particular status as a “medium”, that is, a personable to-communicate with spiritist entities and to use median abilities and special psychic faculties (eg clairvoyance, levitation, reading of thought,...). This special condition must be ascertained through the use of prior expert material (condition E).

The third phase of the project will be oriented to orderly collection and evaluation of technical data during the second phase, to then proceed to the comparative comparison with the clinical notions of official science and medical art.

The fourth phase of the project will be oriented towards the actual operational in-depth survey on each selected subject. In particular, we will proceed as follows:

I) Each selected subject, individually, will be introduced, on days other than the others, in a room properly setup, in which the experiment will take place. The room in question will also be studied from an electromagnetic point of view, before-after the experiment, to learn the empirical data of departure and evaluate the divergences;

II) The room will be monitored for the entire period of the experiment with instruments suitable for continuously and continuously recording what is happening in the surrounding environment;

III) Besides the normal photographic and audio-video instrumentation, the necessary tools will be equipped to study the environment from a thermal and electromagnetic point of view, including the study of the light range, to evaluate possible interactions external during the moment of telepathic contact;

IV) The interested subject will be invited communicate with the alleged spirit entities, during a channeling session, recording every activity that will take place. For the whole time of the experiment, the subject will be connected to an EEG that will monitor it, with an oximeter and a frequency meter.

The fifth phase of the project will be oriented to the orderly collection and evaluation of technical data during the second phase, to then proceed to the comparative comparison with the clinical notions of official science and medical art.

The sixth phase of the project will focus on the final drafting of the doctoral thesis, taking due account of the period of study a broad required by the doctoral program for the doctoral student’s training.

Conclusion

Therefore, if we wanted to reason in conclusion, we could certainly say, beyond the technical criticisms, that: << [...] The most recently published works related to the “search for the spirit in the brain” can
be schematically grouped together in two categories: 1) those with objectives related to the research of the neurobiological basis of the manifestations of faiths and religions, and 2) those aimed at isolating the functional correlates of positive experiences, extrapolating them from the religious context and using them for therapeutic purposes. The research currently conducted by Davidson's group can be traced back to the second of the two addresses, which has already achieved significant results, demonstrating the effectiveness of meditation in determining two effects: a) increase in cognitive abilities dependent on attention; b) slowing of aging. (…) Seventeen volunteers who had previously completed three months of intensive meditation training and twenty-three beginners of the meditative exercise were subjected to an attention test by the Davidson team. The test consisted of distinguishing, in sequence, two numbers included in a series of letters. Beginners have had average performance, that is, like most people undergoing this test, they did not recognize the second number because they were still focused on the first one (blinking); the mediators practiced, on the other hand, were often able to detect both numbers. The result of this experiment can be attributed to an improvement in concentration due to intense meditative practice. The work of Davidson's group, published in June 2007, can be considered emblematic in the studies that found an improvement in cognitive performance resulting from a more effective ability to concentrate due to meditative exercise. (…) Meditation seems to be able to delay the development of some signs of brain aging, as pointed out by Sara Lazar and colleagues from Harvard University; already in an article published in the 2005 Neuro Report, the comparison between twenty expert mediators and fifteen control subjects, had recorded in the former a greater thickness in various areas of the cerebral cortex. In particular, the prefrontal cortex and the anterior part of the right insular were four to eight thousandths of an inch thicker in mediators than in controls. It is interesting to note that older subjects had the greatest increases in thickness: the opposite of what usually happens due to aging. (…).

It is therefore obvious that: (…) if the “Spiritual Neuroscience” wants to claim the right to exist as a distinct branch of studies, it certainly cannot limit its interests to the therapeutic applications of meditation, but must deepen every aspect of the influence of spiritual experience on brain processes, from physiological changes in the mind-body correlation, to a different attitude towards the world. This type of research is only at the beginning and the studies conducted so far have not been under taken on the basis of programs and protocols conceived in a perspective of spiritual dimension understood as a neuro-functional reality. For example, the influence on immunological parameters of charity healing during religious ceremonies has been studied, or the effects on the immune system of a film with intense contents of faith and hope have been evaluated, but it has not yet been tried to define the scheme neuro immunological neurology that makes these experiences more effective in believers. (…) [20].

In conclusion, numerous studies show the direct involvement of the brain areas of the prefrontal cortex and the temporal lobes, and more generally of the circuits connected to the limbic system during mystical and extra sensory experiences. A further profile would deserve a more detailed investigation with respect to the role of the pineal gland in the processes of interaction between the human body and the electromagnetic waves present in the field [21]. On this line of thought the theoretical assumption is clear that perception depends as much on sensation as on the process of internal re- elaboration of the individual, opening the door to theories that are now closer to parapsychology than to neuroscience. And yet, with targeted studies, free from prejudices and preconceptions, one could imagine a new vision of psychic faculties, far beyond the physical body, more linked to the mental body, perhaps seven defining the states of matter in their energetic connotation. Not by chance, using the sight we cannot perceive the bacteria present in the epidermis, even if it exists: this happens because our instrument (the eyes) has a precision calibration that prevents us from wandering beyond the visible spectrum of light; and if reality were not just how we imagine it? With this question I intend to open a door to the future, orienting science towards the hypothesis that new truths can exist and discoveries also in ultraviolet or infrared light.

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