



The Perception on Human Brain Images of Social Mentalizing by Teacher Educators - an Analysis

KEYWORDS

Perception, human brain images, social mentalizing.

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ABSTRACT *The prime objective of this article is to explore the brain areas that are held responsible for social reasoning and to analyse what specific sub processes or functions are computed in these areas, and to look for other brain systems that may support this social cognition capacity. This is an experimental method conducted on the 30 teacher allotted in control and experimental group of different localities. The experimental group was better in learning.*

Theoretical Back drops

Functional neuroimaging can provide answers to the theoretical debates and questions of the brain because it demonstrates whether two tasks or processes engage common or distinct cognitive mechanisms. This relies on the key assumption that different areas are related to qualitative differences in psychological processes. However, this assumption is not necessarily correct (Henson, 2006; Saxe et al., 2004a).

Essentially, the social cognition requires that perceivers extract and comprehend the behavioural motives and stable dispositions of themselves and other persons and groups (Frank Van Overwalle, 2009). This capacity is known as theory of mind (ToM) or mentalizing.

Social cognition

Social cognition largely includes the cognitive processes used to understand and store information about other persons including the self, and about interpersonal norms and scripts (or procedures) to circumnavigate proficiently in the social world. The influence of brain through conscious and unconscious processing mechanisms, which may sometimes lead to biased judgments (Gilbert and Malone, 1995; Trope and Gaunt, 2000; Van Rooy et al., 2003).

Nero Science

Neuroscientists have analysed which structures in the brain support the mental processes involved in social cognition. It is commonly assumed that the capacity to mentalize depends on cognitive brain mechanisms that are potentially dedicated specifically to social reasoning. Neurological evidence from studies of brain lesions (Apperly et al., 2004; Wood et al., 2005) supports this hypothesis.

Functional magnetic Resonance Imaging (fMRI)

The advance of brain imaging and especially functional magnetic resonance imaging (fMRI) which allows unprecedented precision and validity in the localization of brain activity, provides a powerful tool for increasing our understanding of the neural activity in the brain that is associated with social cognition processes (Huettel et al., 2004).

The diversity in social inferences is consistent with neuroscientists' modular view on the brain, where social cognition is seen as a neural circuit with a set of related and highly intertwined, but separate processes that are each specialized in some aspect of the social mentalizing sys-

tem. Brain imaging techniques have identified two main areas responsible for human social cognition—the temporo-parietal junction (TPJ) and the medial prefrontal cortex (mPFC; see Fig. 1).

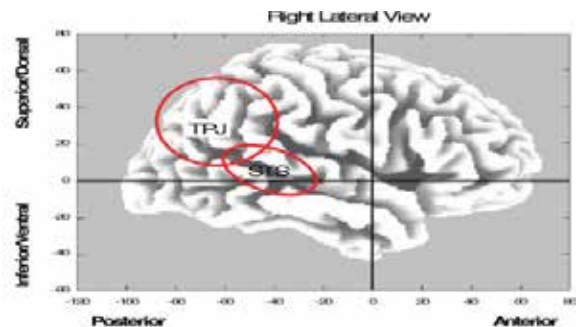


Figure – 1: Showing the temporo-parietal junction (TPJ) and Superior Temporal Sulcus (STS)

How the Temporo-Parietal Cortex identifies Action Goals: The Mirror System

The PMC (premotor cortex) region is responsible for action execution. There the perceived action, its future path and intention is recognized and identified by its resemblance to one's own actions, and this information is passed back to the inferior parietal lobe (IPL) (Iacoboni, 2005; Keysers and Perrett, 2004).

Thus, the shared representation of other and self-movements and intentions supplements observed visual input with inferences about what is not immediately visible but very likely to occur next. In a sense, the IPL "sees" the intentions behind other's actions by "simulating" or "matching" the actions of others in a shared representation.

Perhaps, the mirror system developed this social function on top of an earlier and more basic function for fine-tuning one's movements on the basis of visual feedback from one's own movements (Keysers and Perrett, 2004).

It is important to note that although many mirror neurons in the STS respond to the same degree to other and own movement, a selective number of mirror neurons discharge only to visual information on other's movements, and tend

to be inhibited by own movements and kinesthetic information (Keysers and Perrett, 2004). These viewpoint-other mirror cells allow the brain to resolve the issue of the identity of the actor. This provides us with a direct and automatic sense of agency or ownership, or the experience that body and movements are one's own or from someone else.

If the IPL mirror area is capable to infer the motor intentions of others on the basis of simple action observations, then it appears very plausible that the IPL or a related parietal mirror region could identify intentions that are of a more complex social nature. More importantly, human motions such as body, gaze, and hand movements involve the superior temporal sulcus (STS).

The studies in this overview support the contention that the TPJ is crucially involved in the identification and representation of action goals. Taken together, there is strong evidence that the TPJ is a necessary substrate for inferring the goals of others even if they diverge from one's own, but perhaps the mPFC may be involved in more complex and explicit meta-representations and distinctions of social inference, when rich verbal material is available or when the additional trait inferences about others available.

The figure 2 shows the anatomy of the human brain, and the major areas involved in social cognition and it has been thoroughly studied by Frank Van Overwalle (2007) in the department of psychology in Vrije Universities, Brussel.

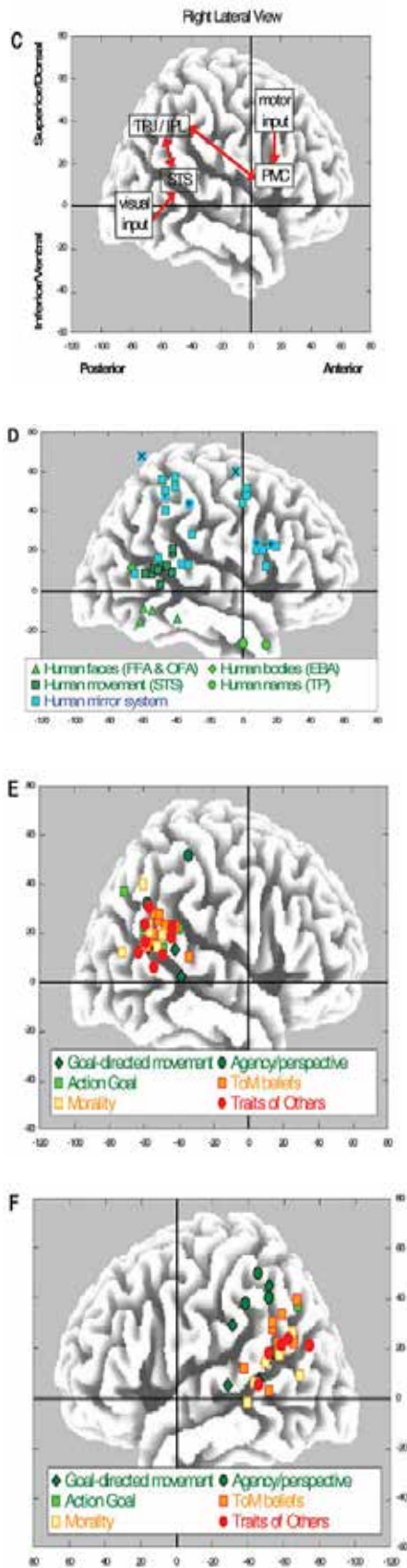


Figure 2 - The functional parts of Human Mind to denote Social cognitive process

Statement of the problem

Many theorists suggest that distortions or deficiencies in social information processing may lead to maladaptive behaviour. Thus, in addition to focusing on improving specific social behaviours in social skills intervention programs, it seems that social-cognitive variables can also be an important target for learning as well. Since the teacher educators are the future social engineers, the neural mechanism of social skills must be imparted and considering these viewpoints, the present study was framed.

Need for the study

In this present day social juncture, the teachers must have

the desirable qualities of learning the social realities of human life pertaining to the various functional mode of brain (Hari Haran et. al.2015). More over the FMEA analysis in table 1 show the learning deficiencies pertaining to brain activity and so as to realise the concept of neural science the present study is undertaken.

Failure Mode Effect Analysis analysis

Failure mode and effect analysis, or FMEA, is an attempt to delineate all possible failures, their effect on the system, the likelihood of occurrence, and the probability that the failure will go undetected (Pyzdek, 2010). It is relatively new to the teacher education.

Table: 1- the FMEA analysis of lacuna in learning the human brain

Mode of failure	Effect of failure	S.I	Causes of failure	O	Controls	D	R	Recommended action
Total unaware of human brain activity	Lack of knowledge construction about socialisation	6	Lack of available resources	7	Periodical guest lectures by scholars or by physicians	4	168	Resourceful Training to and mastery as per the needs
			Inspirational detachment	5	Neuro biology – lab visiting	3	90	Creating infrastructural facilities
			Poor readability	7	Self-monitoring of brain activity	3	126	Devising new of suitable learning structures
			Uninterested in the concepts other than the subject	6	Constant Motivation by friends and teachers	4	144	Providing motivational programs–counselling
			Reluctance for self-evaluation	4	Effective teaching strategies	4	96	Providing motivational programs– counselling
			Inadequate academic practises	8	Effective academic practises	6	384	Continuous and comprehensive assessment by nodal agencies
Responsibility : Authorities of nodal agencies, managements, fads of the institutions, Faculty and students								

Since the FMEA of lack of academic practises (384) is more the present study is required to analyse the teacher educators.

Objectives of the study

The following objective is framed for the current study: To find the learning effectiveness of the teachers with regard to neuro imaging the social mentalizing.

Hypothesis

Based on the objective the following hypothesis was framed for the present study:

There is no significant difference between the control group and experimental group in learning the concepts of neuro imaging the social cognition by Human brain in pre-test and in post-test level.

Methods

The two group pre-test – post-test experimental study was adopted. The experimental treatment was given on the concepts of neuro imaging to the experimental group after conducting the pre-test to the two groups.

Population

The teacher educators of tuticorin district were selected as the population of the study.

Sample

Totally 60 teacher educators were purposively selected and were allotted in two groups namely – control group and Experimental group with 30 teachers each.

The tool

The tool used was the pre-test and post-test questionnaire framed. ICT enabled learning was adopted for the experimental group.

The Results

The't' test was performed to find the results as given in the table 2.

Table: 2 – significant difference between pre –test score and post – test score of control group and Experimental group.

Group	N	Mean	S.D	Std.Error Mean	t' value	'P' Value	Remark (0.05%)
Control group	25	6.28	1.568	0.314	3.781	0.000	S
Experimental group	25	7.92	1.498	0.300			

(S – significant; at the table value, p<0.05)

It is inferred from the table 1 that there is no significant difference between the two groups with regard to pre – test but there is a significant difference between the control group and experimental group in the post – test.

Interpretation

Though the concept of neuro imaging is not very familiar among the teacher educators, the experimental group have learned the concepts related to the social cognition. The results of the study clearly state that the new concepts must be incorporated in the curricular structure so as to make the teacher educators to learn these topics.

Conclusion

The neuro science of social cognitive process is still emerging with well-equipped laboratory systems and the profound knowledge can be enhanced only through the class room learning systems and thus these concepts must be imparted in the minds of student teachers and the teacher educators who indeed has to take self –initiative steps to teach these newest concepts as they are social engineers.

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