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This is Your Brain on Politics (Farah Guest Post)

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This is Your Brain on Politics (Farah Guest Post)

Abstract

This morning's *New York Times* Op Ed page presents us with dazzling pictures, from the lab of Marco Iacoboni, of the brains of swing voters as they react to photos and videos of the leading presidential candidates. Accompanying these pictures are interpretations of the patterns of brain activation offered by Iacoboni and his collaborators. Mitt Romney evokes anxiety – this is deduced from amygdala activation. John Edwards' detractors feel disgust toward him – this is apparent in the insula of these subjects.

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This is Your Brain on Politics? (Farah Guest Post)

The Neuroethics & Law Blog is pleased to present the following guest post, authored by and posted on behalf of [Martha Farah](#), Walter H. Annenberg Professor of Natural Sciences and Director of the Center for Cognitive Neuroscience at the University of Pennsylvania:

This [morning's New York Times Op Ed page](#) presents us with dazzling pictures, from the lab of Marco Iacoboni, of the brains of swing voters as they react to photos and videos of the leading presidential candidates. Accompanying these pictures are interpretations of the patterns of brain activation offered by Iacoboni and his collaborators. Mitt Romney evokes anxiety – this is deduced from amygdala activation. John Edwards' detractors feel disgust toward him – this is apparent in the insula of these subjects.

I suspect that most of the New York Times-reading cognitive neuroscientists of the world spent some of their Sunday morning grousing to their breakfast companions about junk science and the misapplication of functional brain imaging. Having just finished my own grousefest, I would like to undertake a slightly more constructive task – Distinguishing among what I consider to be good and bad reasons for skepticism about the conclusions of Iacoboni and colleagues, and suggesting a way to validate this sort of work.

First, some criticisms that I don't think this work necessarily deserves, starting with the old "you can process brain imaging data to make it show anything" criticism. There is indeed a large amount of data processing involved in creating functional brain images, and in the hands of naïve or unscrupulous researchers this can distort the evidence. But the idea that functional brain images are more susceptible to fakery than many other kinds of scientific evidence is debatable. I think the extreme skepticism about image processing that one sometimes encounters is an overreaction to the realization that functional brain images are not as simple and straightforward as, say, a photograph. At present I see no reason to suspect that Iacoboni and colleagues did anything stupid or sleazy with their image processing.

Another common criticism leveled against various commercial and "real world" applications of brain imaging is that such imaging simply cannot provide useful information about the mental states of individuals, for example their reactions to specific political candidates, and that any use of brain imaging for such purposes is junk science. Functional MRI is a relatively new method, and its potential for measuring all kinds of psychological phenomena is still a matter for experimentation and exploration. Although the most tried and true applications of fMRI involve generalizations about groups of subjects performing scores of

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repetitions of tightly controlled experimental tasks, there are also indications that it can be extended beyond such uses. We should keep our minds open to the possibility that fMRI can indicate the kinds of attitudes and feelings that are relevant to political campaigns.

So why do I doubt the conclusions reported in today's Op Ed piece? The problems I see have less to do with brain imaging per se than with the human tendency to make up "just so" stories and then believe them. The scattered spots of activation in a brain image can be like tea leaves in the bottom of a cup – ambiguous and accommodating of a large number of possible interpretations. The Edwards insula activation might indicate disgust, but it might also indicate thoughts of pain or other bodily sensations or a sense of unfairness, to mention just a few of the mental states associated with insula activation. And of course the possibility remains that the insula activation engendered by Edwards represents other feeling altogether, yet to be associated with the insula. The Romney amygdala activation might indicate anxiety, or any of a number of other feelings that are associated with the amygdala – anger, happiness, even sexual excitement.

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Some of the interpretations offered in the Op Ed piece concern the brain states of subsets of the subjects, for example just the men or just the most negative voters. Some concern the brain states of the subjects early on in the scan compared with later in the scan. Some concern responses to still photos or to videos specifically. With this many ways of splitting and regrouping the data, it is hard not to come upon some interpretable patterns. Swish those tea leaves around often enough and you will get some nice recognizable pictures of ocean liners and tall handsome strangers appearing in your cup!

How can we tell whether the interpretations offered by Iacoboni and colleagues are adequately constrained by the data, or are primarily just-so stories? By testing their methods using images for which we know the "right answer." If the UCLA group would select a group of individuals for which we can all agree in advance on the likely attitudes of a given set of subjects, they could carry out imaging studies like the ones they reported today and then, blind to the identity of personage and subject for each set of scans, interpret the patterns of activation.

I would love to know the outcome of this experiment. I don't think it is impossible that Iacoboni and colleagues have extracted some useful information about voter attitudes from their imaging studies. This probably puts me at the optimistic end of the spectrum of cognitive neuroscientists reading this work. However, until we see some kind of validation studies, I will remain skeptical.

More..

In closing, there is a larger issue here, beyond the validity of a specific study of voter psychology. A number of different commercial ventures, from neuromarketing to brain-based lie detection, are banking on the scientific aura of brain imaging to bring them customers, in addition to whatever real information the imaging conveys. The fact that the UCLA study involved brain imaging will garner it more attention, and possibly more credibility among the general public, than if it had used only behavioral measures like questionnaires or people's facial expressions as they watched the candidates. Because brain imaging is a more high tech approach, it also seems more "scientific" and perhaps even more "objective." Of course, these last two terms do not necessarily apply. Depending on the way the output of UCLA's multimillion dollar 3-Tesla scanner is interpreted, the result may be objective and scientific, or of no more value than tea leaves.

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