
DISCUSSION TOPICS

**DISCOVERING THE HUMAN BRAIN:
NEW PATHWAYS TO NEUROSCIENCE**

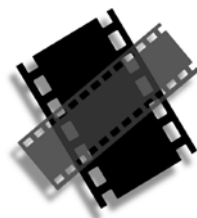
With

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DAVIDSON *films*



**classroom
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It is hard to pick up a newspaper or magazine today without articles on neuroscience. This film was designed to show students the ways the brain was and is being studied, and to refresh their basic vocabulary about the neurons. You might open a discussion with an article you've seen or ask them about what they have recently read about brain functions.

1. The intact outside of the brain is often portrayed but not so much the internal structures like the amygdala (that is a plural term as there are two, the singular is amygdalae) and the hippocampus. The limbic system, of which the amygdala are part, will be featured more comprehensively in the film in this series, THE AFFECTIVE BRAIN.
2. Unfortunately, almost everyone knows someone who has had a brain injury. The discussion of Broca's patient and Phineas Gage may evoke comments about grandfathers who have had strokes or even of the lobotomy of Rosemary Kennedy. You can use these examples to discuss the specificity of the functions of brain regions. Strokes have very different results depending on the region of the brain that is affected. The lobotomy was used to "calm" emotionality but had dire results for people like John Kennedy's sister.
3. Phineas Gage has a roadside monument with his story in Cavendish, Vermont. His actual skull, a life mask of Gage and the 13-pound spike is in the Warren Anatomical Museum in Boston. Stories say that he used the spike as a walking stick after the accident.
4. The EEG apparatus looks scary, but is completely harmless, of course. (Students may confuse the term EEG with EKG, electrocardiogram, which tracks cardiac function.) The resulting ERP's are widely used in studies of attention and language development as shown in another film in this series, HUMAN BRAIN DEVELOPMENT. ERP's record the activity of groups of neurons, not individual ones. They can show the difference in activation between certain brain regions as a result of a perceptual or intellectual activity. (The subject has to stay very still, thus the measurement of motoric activities with EEG is not possible.)
5. As you well know, PET scans and MRI scans are used to exam other systems of the body beyond the brain and your students will probably have at least heard the terms and many may have experienced one or the other. The machines are enormously expensive (from a million dollars on) to purchase and operate but have wonderfully increased our knowledge benefiting both clinical and research endeavors. There are numerous career opportunities for young people in the ever-growing field of medical imaging. (CT scans were not mentioned in this film. CT stands for Computerized Tomography and they utilize enhanced X Ray images.)
6. Mirror neurons are a fascinating subject in themselves. PBS has a 14 minute segment on them available at <http://www.pbs.org/wgbh/nova/sciencenow/3204/01.html> Their connection to autism is being studied by people at UCLA. and Dr. V.S. Ramachandran, now at the University of California, San Diego has written a very interesting article linking mirror neurons to the leap in evolution that enabled humans to develop language. It can be found at: www.edge.org/3rd_culture/ramachandran/ramachandran_p1.html

Other related sites:

- Susan Bookheimer: http://airto.bmap.ucla.edu/bmcweb/bmc_bios/SusanBookheimer/
- Brain atlas: www.med.harvard.edu/AANLIB/home.html Very thorough!
- Brain information: www.thebrain.mcgill.ca/flash/index_a.html. Don't be turned off by its rather bleak front page. It is a wonderful site where you can choose topics by type (social, psychological, neurological, cellular, or molecular) and your level of familiarity (beginning, intermediate and advanced).
- Phineas Gage: www.deakin.edu.au/hmnbs/psychology/gagepage/ or www.roadsideamerica.com/attract/VTCAVgage.html
- Brain imaging: www.loni.ucla.edu/~Thompson/thompson.html. Wonderful computer enhanced images of the brain including those that show development and the ravages of Alzheimer's Disease and methamphetamine use.

We hope that you will send us topics for discussion that we may share with other instructors. Some of the topics can be used as essay questions, others as leads to discussion in class and still others are musings by the producer about what did not get into the videos. Please email us reactions and suggestions so we can continue to make the topics more useful.

Our email address is dfi@davidsonfilms.com.

RELATED FILM

Also available from Davidson Films

HUMAN BRAIN DEVELOPMENT: NATURE AND NURTURE (2007) 27 minutes