

Emotion: Social and Neuroscience Perspectives

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Spring 2002

When two disciplines, one interested in understanding social cognition, the other in understanding the brain meet, a topic of obvious mutual interest is the study of emotion. Both neuroscientists and psychologists have learned on their own about the neural basis of emotion and its expressions in social life. In this course, two instructors whose primary expertise is in social cognition, will teach about social and neuroscience perspectives on emotion, with a focus on recent advances. The first part of the course will focus on theoretical perspectives that address the neurobiology and neuropsychology of emotion. The second part will require attention to specific emotions such as fear, anger, and disgust – emotions whose neural basis is best understood. The third section will explore the interaction of emotion with memory and the fourth will delve into the newly growing area of emotion and social relations. Finally, in section 5, we take up issues concerning attitude and beliefs as examined in the minds and brains of individuals as they construe themselves and others as members of social groups.

Requirements.

1. Students will be expected to lead at least one of the class sessions, most likely with other students, depending on the size of the class. This will count for 20% of the final grade.
2. The day before each class session, students will be expected to turn in a thoughtful discussion question that draws on the readings. Of course, the questions should be relevant to the topic. Attempts to integrate social and neuroscience perspectives on the issue are particularly important. The questions should be forwarded to the discussion leaders and instructors no later than 5 pm on Tuesday. Discussion questions will be graded and will count for 30% of the final grade.
3. Participation in class on a weekly basis is expected and will account for 20% of the grade.
3. A 20-25 page research proposal, written in APA style, is expected at the end of the semester. This paper will count for 30% of the final grade.

PART I: THEORETICAL PERSPECTIVES

WEEK 1: Social Psychology and Neuroscience

Adolphs, R., Tranel, D., & Damasio, A. R. (1998). The Human Amygdala in Social Judgment. Nature, 393, 470-474.

Adolphs, R. (2001). The neurobiology of social cognition. Current Opinion in Neurobiology, 11, 231-239.

Cacioppo, John T.; Berntson, Gary G. (1992) Social psychological contributions to the decade of the brain: Doctrine of multilevel analysis. American Psychologist, 47, 1019-1028.

Klein, S. B., & Kihlstrom, J. F. (1998). On bridging the gap between social-personality psychology and neuropsychology, Personality & Social Psychology Review, 2, 228-242.

Ochsner, K. N., & Lieberman, M. D. (2001) The emergence of social cognitive neuroscience. American Psychologist, 56, 717-734.

WEEK 2: Affect and Neuroscience

Bradley, M. M. (2000). Emotion and Motivation. In Cacioppo, J.T., Tassinary, L. G., & Berntson, G. G. (Eds.) Handbook of Psychophysiology (2nd Ed.). Cambridge: Cambridge University Press.

LeDoux, J. E. (1996). The emotional brain: The mysterious underpinnings of emotional life. New York, NY, US: Simon & Schuster (1996) 384 pp.

LeDoux, J. E. (2000). Emotion circuits in the brain. Annual Review of Neuroscience, 23, 155-184.

Panksepp, Jaak (1992). A critical role for "affective neuroscience" in resolving what is basic about basic emotions. Psychological Review, 99, 554-560.

WEEK 3: Neural Representation of Emotions

- Haxby, J. V., Gobbini, M.I., Furey, M.L., Ishai, A., Schouten, J.L., Pietrini, P. (2001) Distributed and overlapping representations of faces and objects in ventral temporal cortex. Science, 293, 2425-30.
- Kanwisher, N., McDermott, J., & Chun, M. M. (1997). The fusiform face area: A module in human extrastriate cortex specialized for face perception. Journal of Neuroscience, 17, 4302-4311
- Morris J.S., Scott, S.K., Dolan R.J. (1999). Saying it with feeling: neural responses to emotional vocalizations. Neuropsychologia, 37, 1155-63.
- Reiman, E.M., Lane, R.D., Ahern, G.L., Schwartz, G.E., Davidson, R.J., Friston, K.J., Yun, L.S., Chen, K. (1997). Neuroanatomical correlates of externally and internally generated human emotion. American Journal of Psychiatry, 154, 918-25.
- Tarr M. J., & Gauthier, I. (2000). FFA: a flexible fusiform area for subordinate-level visual processing automatized by expertise. Nature Neuroscience, 3, 764-9.

PART 2: SPECIFIC EMOTIONS

WEEK 4: Fear and Anger

- Harmon-Jones, E., & Sigelman, J. (2001). State anger and prefrontal brain activity: Evidence that insult-related relative left-prefrontal activation is associated with experienced anger and aggression. Journal of Personality & Social Psychology, 80, 797-803.
- Harmon-Jones, E., & Allen, J. B. (1998). Anger and frontal brain activity: EEG asymmetry consistent with approach motivation despite negative affective valence. Journal of Personality & Social Psychology, 74, 1310-1316
- Kesler-West, M.L., Andersen, A.H., Smith C.D., Avison, M.J., Davis, C.E., Kryscio, R.J., Blonder, L.X. (2001). Neural substrates of facial emotion processing using fMRI. Brain Res Cogn Brain Research, 11, 213-26.
- Morris, J.S., Ohman, A. & Dolan, R.J. (1999). A subcortical pathway to the right amygdala mediating “unseen” fear. Proceedings of the National Academy of the Sciences, 96, 1680-1685.
- Morris, J.S., Ohman, A. & Dolan, R.J. (1998). Conscious and unconscious emotional learning in the human amygdala. Nature, 393 (6684), 467-470.
- Pizzagalli D, Koenig T, Regard M, Lehmann D. (1998). Faces and emotions: brain electric field sources during covert emotional processing. Neuropsychologia, 36, 323-32.
- Rapcsak, S.Z., Galper, S.R., Comer, J.F., Reminger, S.L., Nielsen, L., Kaszniak, A.W., Verfaellie, M., Laguna, J.F., Labiner, D.M. & Cohen, R.A. (2000). Fear Recognition deficits after focal brain damage. A cautionary note. Neurology, 54, 575-581.
- Sutton, S. K., & Davidson, R. J. (1997). Prefrontal brain asymmetry: A biological substrate of the behavioral approach and inhibition systems. Psychological Science, 8, 204-210
- Whalen, P. J., Rauch, S. L., Etcoff, N. L., McInerney, S. C., Lee, M. B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. Journal of Neuroscience, 18, 411-418.

WEEK 5: Disgust

- Calder, A.J., Keane, J., Manes, F., Antoun, N., & Young, A.W. (2000). Impaired recognition and experience of disgust following brain injury. Nature Neuroscience, 3 (11), 1077-1078.
- Gray, J.M., Young, A.W., Barker, W.A., Curtis, A. & Gibson, D. (1997). Impaired recognition of disgust in Huntington’s disease gene carriers. Brain, 120, 2029-2038.
- Lane, R. D., Reiman, E. M., Ahern, G. L., & Schwartz, G. E. (1997). Neuroanatomical correlates of happiness, sadness, and disgust. American Journal of Psychiatry, 154, 926-933.

Phillips, M.L., Young, A.W., Senior, C., Brammer, M., Andrew, C., Calder, A.J., Bullmore, E.T., Perrett, D.I., Rowland, D., Williams, S.C., Gray, J.A., David, A.S. (1997). A specific neural substrate for perceiving facial expressions of disgust. *Nature*, 389, 495-8.

Rozin, P., Lowery, L., & Ebert, R. (1994). Varieties of disgust faces and the structure of disgust. *Journal of Personality & Social Psychology*, 66, 870-881.

Part 3: MEMORY AND EMOTION

WEEK 6: Working Memory

Baddeley, A. (2000). Short term and working memory. In E. Tulving and F.I.M. Craik (Eds.). *The Handbook of Memory*. New York: Oxford University Press.

Cohen, J.D., Perlstein, W.M., Braver, T.S., Nystrom, L.E., Noll, D.C., Jonides, J. & Smith, E.E. (1997). Temporal dynamics of brain activation during a working memory task. *Nature*, 386 (6625), 604-608.

LeDoux, J. E. (1993). Emotional memory systems in the brain, *Behavioural Brain Research*, 58, 69-79

Moscovitch, M. (1992). Memory and working-with-memory: A component process model based on modules and central systems. *Journal of Cognitive Neuroscience*, 4(3), 257-267.

Phillips ML, Bullmore ET, Howard R, Woodruff PW, Wright IC, Williams SC, Simmons A, Andrew C, Brammer M, David AS. (1998). Investigation of facial recognition memory and happy and sad facial expression perception: an fMRI study. *Psychiatry Research*. 83(3):127-38.

Smith, E.E. & Jonides, J. (1997). Working memory: A view from neuroimaging. *Cognitive Psychology*, 33, 5-42.

Smith, E.E. & Jonides, J. (1999). Storage and executive processes in the frontal lobes. *Neuroscience*, 283 (5408), 1657-1661.

Week 7: Encoding and Source memory

Gonsalves, B., & Paller, K. A. (2000). Neural events that underlie remembering something that never happened. *Nature Neuroscience*, 3, 1316-1321.

Johnson, M. K., Nolde, S. F., & De Leonardis, D. M. (1996). Emotional focus and source monitoring. *Journal of Memory & Language*, 35, 135-156

Mitchell, K. J., Johnson, M. K., Raye, C. L., & D'Esposito, M. (2000). fMRI evidence of age-related hippocampal dysfunction in feature binding in working memory. *Cognitive Brain Research*, 10, 197-206

Prabhakaran, V., Narayanan, K., Zhao, Z., & Gabrieli, J. D. E. (2000). Integration of diverse information in working memory within the frontal lobe. *Nature Neuroscience*, 3, 85-90.

Ranganath, C., Johnson, M. K., D'Esposito, M. (2000). Left anterior prefrontal activation increases with demands to recall specific perceptual information. *Journal of Neuroscience*, 20, 108RC, 1-5.

Raye, C. L., Johnson, M. K., Mitchell, K. J., Nolde, S. F. & D'Esposito, M. (2000). fMRI investigations of left and right PFC contributions to episodic remembering. *Psychobiology*, 28, 197-206

Schacter, D. L., & Buckner, R. L. (1998). On the relations among priming, conscious recollection, and intentional retrieval: Evidence from neuroimaging research. *Neurobiology of Learning & Memory*, 70, 284-303

Part 4: EMOTION AND SOCIAL RELATIONS

WEEK 8: Perceiving Others' Emotions

- Adams, F. (2001). Empathy, neural imaging and the theory versus simulation debate. Mind & Language, 16, 368-392.
- Farrow T.F., Zheng Y., Wilkinson I. D., Spence S. A., Deakin J. F., Tarrier N., Griffiths P. D., & Woodruff P. W. (2001). Investigating the functional anatomy of empathy and forgiveness. Neuroreport, 12, 2433-8.
- Gardner, W. L., Gabriel, S., & Diekmann, A. B. (xxxx). Interpersonal processes. In Cacioppo, J.T., Tassinary, L. G., & Berntson, G. G. (Eds.) Handbook of Psychophysiology (2nd Ed.).Cambridge: Cambridge University Press.
- Levenson, R.W., & Ruef, A.M. (1997). Physiological aspects of emotional knowledge and rapport. In W.J. Ickes (Ed). Empathic accuracy. (pp. 44-72).
- Shallice, T. (2001). 'Theory of mind' and the prefrontal cortex. Brain, 124(Pt 2):247-8.
- Stuss, D.T., Gallup, G.G. Jr, Alexander, M. P.(2001). The frontal lobes are necessary for 'theory of mind'. Brain, 124, 279-86.
- Williams J.H., Whiten, A., Suddendorf, T., Perrett D. I. (2001). Imitation, mirror neurons and autism. Neurosci Biobehav Rev., 25, 287-95.

WEEK 9: Implicit Emotion and Volition

- Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. Journal of Personality & Social Psychology, 76, 893-910.
- Elliott, R. & Dolan, R. (1998). Neural response during preference and memory judgements for subliminally presented stimuli: A functional neuroimaging study. The Journal of Neuroscience, 18 (12), 4697-4704.
- Gallese, V., Fadiga, L., Fogassi, L., & Rizzolatti, G. (1996). Action recognition in the premotor cortex. Brain, 119, 593-609.
- Heyes, C. (2001). Causes and consequences of imitation. Trends in Cognitive Sciences, 5 (6), 253-261.
- Libet, B. (1985). Unconscious cerebral initiative and the role of consciousness will in voluntary action. The Behavioral and Brain Sciences, 8, 529-566.
- Lundqvist, L-O., & Dimberg, U. (1995). Facial expressions are contagious. Journal of Psychophysiology, 9, 203-211
- Nishitani N, & Hari R.(2000). Temporal dynamics of cortical representation for action. Proc Natl Acad Sci U S A. 97,913-8.
- Rizzolatti, G. & Arbib, M.A. (1998). Language within our grasp. Trends in Neuroscience, 5, 188-194.

Part 5: ATTITUDE (EVALUATION) AND STEREOTYPES

WEEK 10: Attitudes

- Greenwald, A.G. & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. Psychological Review, 102, 4-27.
- Chee, M.W., Sriram, N., Soon, C.S., & Lee, K.M. (2000). Dorsolateral prefrontal cortex and the implicit association of concepts and attributes. Neuroreport, 11, 135-40.
- Milne, E, & Grafman, J. (2000). Ventromedial prefrontal cortex lesions in humans eliminate implicit gender stereotyping. Journal of Neuroscience, 21, RC150.

WEK 11: Ingroups and Outgroups

- Blascovich, J., Wyer, N. A., Swart, L. A., & Kibler, J. L. (1997). Racism and racial categorization. Journal of Personality & Social Psychology, 72, 1364-1372
- Hart, A.J., Whalen, P.J., Shin, L.M., McInerney, S.C., Fischer, H., & Rauch, S.L. (2000).

Differential response in the human amygdala to racial outgroup vs ingroup face stimuli. Neuroreport, 11, 2351-2355.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. Journal of Personality and Social Psychology, 68, 997-1013.

Golby, A. J., Gabrieli, J. D. E., Chiao, J.Y., & Eberhardt, J. L. (2001). Differential responses in the fusiform region to same-race and other-race faces. Nature Neuroscience, 4, 845 – 850.

Guglielmi, R. S. (1999). Psychophysiological assessment of prejudice: Past research, current status, and future directions. Personality and Social Psychology Review, 3, 123-157.

Phelps, E.A., O'Connor, K.J., Cunningham, W.A., Funayama, E.S., Gatenby, J.C., Gore, J.C., Banaji, M.R. (2000). Performance on indirect measures of race evaluation predicts amygdala activation. Journal of Cognitive Neuroscience, 12, 729-38.

Vanman, E. J., Paul, B.Y., Ito, T. A., & Miller, N. (1997). The modern face of prejudice and structural features that moderate the effect of cooperation on affect. Journal of Personality & Social Psychology, 73, 941-959.

WEEK 12: The Self

Canli T., Zhao Z., Desmond J.E., Kang E., Gross J., & Gabrieli J.D. (2001). An fMRI study of personality influences on brain reactivity to emotional stimuli. Behavioral Neuroscience, 115, 33-42.

Galinsky, A.D., & Moskowitz, G.B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. Journal of Personality & Social Psychology, 78, 708-724.

Hass, R.G. (1984). Perspective taking and self-awareness: Drawing an E on your forehead. Journal of Personality & Social Psychology, 46, 788-798.

Kahan, T. L., & Johnson, M. K. (1992). Self effects in memory for person information. Social Cognition, 10, 30-50

Kircher T.T., Senior C., Phillips M.L., Benson P.J., Bullmore E.T., Brammer M., Simmons A., Williams S.C., Bartels M., & David A.S. (2000). Towards a functional neuroanatomy of self processing: Effects of faces and words. Brain Res Cogn Brain Research, 10, 133-44.

Kircher T.T., Senior C., Phillips M.L., Rabe-Hesketh S., Benson P.J., Bullmore E.T., Brammer M., Simmons A., Bartels M., David A.S. (XXXX) Recognizing one's own face. Cognition, 78, B1-B15.

Leduc, M., Herron, J. E., Greenberg, D. R., Eslinger, P. J., & Grattan, L. M. (1999). Impaired awareness of social and emotional competencies following orbital frontal lobe damage. Brain & Cognition, 40, 174-177