

Cognitive Neuroscience

Carl Olson

CMU Psychology # 85-765
PITT Neuroscience # NROSCI 2005
Fall 10

Tuesday, Aug 31 **Introduction (Olson)**

Kolb, B., & Wishaw, I.Q. (1996). General principles of neocortical function. Fundamentals of human neuropsychology (pp. 160-179). New York: Freeman.

Thursday, Sept 2 **Motion Vision (Olson)**

Born, R. T., & Bradley, D. C. (2005). Structure and function of visual area MT. Annual Rev. Neurosci., 28, 157-89.

Nawrot, M. (2003). Disorders of motion and depth. Neurol Clin N Am, 609-629.

Tuesday, Sept 7 **Expert Vision (Tarr)**

Tarr, M. J., & Gauthier, I. (2000). FFA: A flexible fusiform area for subordinate-level visual processing automatized by expertise. Nat Neurosci, 3(8), 764-9.

Kanwisher, N. (2000). Domain specificity in face perception. Nat Neurosci, 3(8), 759-763.

Grill-Spector, K., Sayres, R., & Ress, D. (2006). High-Resolution imaging reveals highly selective nonface clusters in the fusiform face area. Nat Neurosci, 9(9), 1177-85.

Thursday, Sept 9 **Pattern Vision (Olson)**

Gross, C. G. (2008). Single neuron studies of inferior temporal cortex. Neuropsychologia, 46, 841-852.

Farah, M. J., & Feinberg, T. E. (1997). Visual object agnosia. In T. E. Feinberg & M. J. Farah (Eds). Behavioral neurology and neuropsychology (pp. 239-244). New York: Freeman.

DeRenzi, E. (1997). Prosopagnosia. In T. E. Feinberg & M. J. Farah (Eds), Behavioral neurology and neuropsychology (pp. 245-255). New York: Freeman.

Tuesday, Sept 14
Olfaction (Urban)

Su, C-Y., Menuz, K., Carlson, J. R. (2009). Olfactory perception: Receptors, cells, and circuits. Cell, 139, 45-59.

Keller, A., & Vosshall, L. B. (2007). Influence of odorant receptor repertoire on odor perception in humans and fruit flies. Proc Natl Acad Sci USA, 104(13), 5614-9.

Thursday, Sept 16
Attention (Olson)

Egeth, H. E., & Yantis, S. (1997). Visual attention: Control, representation, and time course. Annu. Rev. Psychol, 48, 269-97.

Moore, T. (2006). The neurobiology of visual attention: Finding sources. Current Opinion in Neurobiology, 16, 159-165.

Tuesday, Sept 21
Neglect (Olson)

Behrmann, M. (2000) Spatial Reference Frames and Hemispatial Neglect. in The New Cognitive Neurosciences (2nd ed. pp. 651-666). Cambridge: MIT Press.

Adair, J. C., & Barrett, A. M. (2008). Spatial neglect: Clinical and neuroscience review: A wealth of information on the poverty of spatial attention. Ann. N.Y. Acad. Sci, 1142, 21-43.

Heilman, Kenneth M., Watson, R. T., & Valenstein, E. (1997). Neglect: Clinical and anatomical aspects. In T. E. Feinberg & M. J. Farah (Eds.), Behavioral neurology and neuropsychology, (pp. 309-317). New York: Freeman.

Thursday, Sept 23
Spatial Cognition (Olson)

Anderson, R. A., & Buneo, C. A. (2002). Intentional maps in posterior parietal cortex. Ann. Rev. Neurosci, *25*, 189-220.

Colby, C. L., & Duhamel, J.-R. (1996). Spatial representations for action in parietal cortex. Cognitive Brain Research, *5*, 105-115.

Tuesday, Sept 28

Motor Overview (Olson)

Ghez, C. (1991). Voluntary movement. In E. R. Kandel, et. Al (Eds.), Principles of neuroscience (pp. 609-625). New York: Elsevier.

Tanji, J., & Shima, K. (1996). Contrast of neuronal activity between the supplementary motor area and other cortical motor areas. In H. O. Luders, Advances in Neurology, 70: Supplementary Sensorimotor Area (pp. 95-103). Philadelphia: Lippincott-Raven Publishers.

Thursday, Sept 30

Motor Control and Neural Prosthetics (Batista)

Hochberg, L. R., Serruya, M. D., Friehs, G. M., Mukand, J. A., Saleh, M., Caplan, A. H., Branner, A., Chen, D., Penn, R. D., & Donoghue, J. P. (2006). Neuronal ensemble control of prosthetic devices by a human with tetraplegia. Nature, *442*, 164-171.

Velliste, M., Perel, S., Spalding, M. C., Whitford, A. S., & Schwartz, A. B. (2008). Cortical control of a prosthetic arm for self-feeding. Nature, *453*, 1098-1101.

Tuesday, Oct 5

EXAM 1 (covers 8/30-9/23)

Thursday, Oct 7

Basal Ganglia (Strick)

Alexander, G. E., DeLong, M. R., & Strick, P. L. (1986). Parallel organization of functionally segregated circuits linking basal ganglia and cortex. Ann. Rev. Neuroscience, *9*, 357-381.

Grabli, D., McCairn, K., Hirsch, E. C., Agid, Y., Feger, J., Francois, C., & Tremblay, L. (2004). Behavioural disorders induced by external globus pallidus dysfunction in primates: I. Behavioral study. Brain, *127*, 2039-2054.

Francois, C., Grabli, D., McCairn, K., Jan, C., Karachi, C., Hirsch, E-C., Feger, J., & Tremblay, L. (2004). Behavioural disorders induced by external globus pallidus dysfunction in primates II. Anatomical study. Brain, 127, 2055–2070.

Tuesday, Oct 12

Eye Movements (Gandhi)

Sparks, D. L. (2002). The brainstem control of saccadic eye movements. Nat. Rev. Neurosci., 3, 952-65.

Thursday, Oct 14

Memory and the Cortico-Limbic-Diencephalic System (Thiels)

Corkin, S., Amaral, D. G., Gonzalez, R. G., Johnson, K. A., Hyman, B. T. (1997). H. M.'s medial temporal lobe lesion: Findings from magnetic resonance imaging. J. Neuroscience, 17, 3964-79.

http://www.nytimes.com/2008/12/05/us/05hm.html?_r=1

Tuesday, Oct 19

Memory and the Cortico-Striatal-Diencephalic System (Thiels)

Knowlton, B. J., Mangles, J. A., Squire, L. R. (1996). A neostriatal habit learning system in humans. Science, 273, 1353-4.

Thursday, October 21

Hippocampus (Touretzky)

Hargreaves, E. L. (2001). The Hippocampus. Web page available at <http://homepages.nyu.edu/~eh597/seahorse.htm>, accessed August 4, 2006.

Hargreaves, E. L. (2001). Place Cells. Web page available at <http://homepages.nyu.edu/~eh597/place.htm>, accessed August 4, 2006.

Poucet, B., Lenck-Santini, P. P., Paz-Villagran, V., Save, E. (2003). Place cells, neocortex and spatial navigation: A short review. Journal Physiol, 97(4-6), 537-46.

Tuesday, Oct 26

Behavior and Psycholinguistics (Fiez)

Lany, J., & Saffran, J. R. (2010). From statistics to meaning: Infants' acquisition of lexical categories. Psychological Science, 21(2), 284-291.

Thursday, Oct 28
Neuropsychology (Fiez)

Patterson, K., Nestor, P. J., & Rogers, T. T. (2007). Where do you know what you know? The representation of semantic knowledge in the human brain. Nature, 8, 976-988.

Tuesday, Nov 2
Functional Imaging (Fiez)

Hickok, G., & Poeppel, D. (2007). The cortical organization of speech processing. Nature, 8, 393-402.

Thursday, Nov 4
Executive Control (Olson)

Kimberg, D. Y., D'Esposito, M., & Farah, M. J. (1997). Frontal lobes: Cognitive neuropsychological aspects, In T. E. Feinberg, & M. J. Farah (Eds.), Fundamentals of human neuropsychology (pp. 409-418). New York: Freeman.

Tuesday, Nov 9
EXAM 2 (covers 9/28-10/21)

Thursday, Nov 11
Working Memory (Olson)

Miller, E.K. & Cohen J.D. (2001) An integrative theory of prefrontal cortex function. Ann. Rev. Neurosci., 24, 167-202.

Tues, Nov 16 & Thurs, Nov 18
NO CLASS - Neuroscience Meeting

Tuesday, Nov 23
Emotion (Olson)

Ledoux, J. E. (2000). Emotion circuits in the brain. Annu. Rev. Neurosci., 23, 155-184.

Thursday, Nov 25
NO CLASS – Thanksgiving

Tuesday, Nov 30
Drug Addiction (Bradberry)

TBA

Thursday, Dec 2
Schizophrenia (Lewis)

Lewis, D. A., & Sweet, R. A. (2009). Schizophrenia from a neural circuitry perspective: Advancing toward rational pharmacological therapies. The Journal of Clinical Investigation, 119(4), 706-16.

Tuesday, Dec 7
EXAM 3 (covers 10/26-12/2)