Current topics in memory and cognition (PSYD50H3F)

Tuesdays 9 am – 11 am
Fall term 2008
Department of Psychology, University of Toronto at Scarborough

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Instructor:	P. Vivien Rekkas
Contact Information:	Room BV 361 Office phone: (416) 287-7658 Email: vrekkas@utsc.utoronto.ca *(best method of contact)*
Office Hours:	by appointment

Course Description: This course will examine current issues of intense debate in cognitive neuroscience research, using work in declarative memory as a reference point. Declarative memory, particularly autobiographic memory formation and recall, entails a complex set of cognitive operations including visual imagery, spatial and temporal information processing, semantic and working memory functions, and the engagement of subsystems underlying attention and emotion. Students will be asked to read and critique a series of related research articles in an effort to bind together the diverse mental operations which underlie fundamental cognitive processes. Discussions will range from the theoretical, such as those surrounding the consolidation debate, to recent neurobiological work in learning and memory. Students will also gain a better understanding of the benefits and limitations of the various research modalities currently in use in cognitive neuroscience research.

Prerequisites: Memory and Cognition (PSYB51H)

Readings: No course textbook will be assigned. Students are asked to download weekly articles as they are posted on the instructor's UTSC Intranet site. Students are expected to read relevant articles *prior* to class, as this is central to successful class participation. Additional articles will be chosen by individual students and the instructor to supplement class presentations and lectures. Supplementary articles are not required reading although students are encouraged to survey this material as much as possible.

Evaluation:

a. class attendance and general participation*	20%
b. class presentations	30%
c. essay proposal	10%
d. essay *(due on last day of class, Nov. 25th)*	40%

*The success of the seminar format rests on the enthusiasm and preparedness of the students, that is to say, their active and on-going participation. For this reason, following two missed classes, 5% will be deducted from this mark for each subsequent absence, unless student provides suitable medical or legal documentation proving they could not attend class. In the latter case, this portion of the participation mark will be transferred to component b (class presentations) of the grading scheme.

The following is an abbreviated list of articles to be covered during the course:

Aggleton, J.P., and Brown, M.W. (1999). Episodic memory, amnesia, and the hippocampal-thalamic axis. *Behavioural Brain Science, 22*, 425-444; discussion 445-490.

Bird, C.M., and Burgess, N. (2008). The hippocampus and memory: insights from spatial processing. *Nature Neuroscience Reviews, 9*, 182-194.

Bischofberger, J. (2007). Young and excitable: new neurons in memory networks. *Nature Neuroscience, 10*, 273-275.

Buchanan, T.W., Tranel, D., and Adolphs, R. (2006). Memories for emotional autobiographical events following unilateral damage to medial temporal lobe. *Brain, 129*, 115-127.

Buckner, R.L., and Carroll, D. C. (2007). Self-projection and the brain. *Trends in Cognitive Science, 11*, 40-57.

Buss, C., Wolf, O.T., Witt, J. and Hellhammer (2006). Autobiographic memory impairment following acute cortisol administration. *Psychoneuroendocrinology, 29*, 1093-1096.

Byrne, P., Becker, S., and Burgess, N. (2007). Remembering the past and imagining the future: a neural model of spatial memory and imagery. *Psychological Review, 114*, 340-375.

Cabeza, R., Ciaramelli, Olson, I., and Moscovitch, M. (2008). Parietal cortex and episodic memory: an attentional account. *Nature Neuroscience Reviews, 9*, 613-625*l*

Frankland, P.W., and Bontempi, B. (2005). The organization of recent and remote memories. *Nature Reviews Neuroscience, 6,* 119-130.

Iaria, B. Petrides, M., Dagher, A., Pike, B., and Bohbot, V.D. (2003). Cognitive strategies dependent on the hippocampus and caudate nucleus in human navigation: variability and change with practice. *Journal of Neuroscience, 23*, 5945-5952.

Karnath, H.O. (2001). New Insights into the functions of the superior temporal cortex. *Nature Reviews Neuroscience, 2,* 568-576.

LaBar, K.S., and Cabeza, R. (2006). Cognitive neuroscience of emotional memory. *Nature Neuroscience Reviews, 7*, 54-64.

Lisman, J., and Morris, R.G.M. (2001) Why is cortex a slow learner? *Nature, 411*, 248-249.

Lieberman, M. D. (2000). Intuition: A social cognitive neuroscience approach. *Psychological Bulletin, 126*, 109-137 *(intuition is discussed in the context of implicit and explicit memory/learning).*

Manns, J.R., Howard, M.W., and Eichenbaum, H. (2007). Gradual changes in hippocampal activity support remembering the order of events. *Neuron, 56*, 530-540.

Moscovitch, M. et. al. (2005). Functional neuroanatomy of remote episodic, semantic and spatial memory; a unified account based on multiple trace theory. *Journal of Anatomy, 207,* 35-66.

Roediger, H.L., Meade, M.L., and Bergman, E.T. (2001). Social contagion of memory. *Psychonomic Bulletin and Review, 8*, 365-371.

Simons, J.S., and Spiers, H.J. (2003). Prefrontal and medial temporal lobe interactions in long-term memory. *Nature Reviews Neuroscience, 4*, 637-648.

Shohamy, D., et. al. (2004). Cortico-striatal contributions to feedback-based learning: converging data from neuroimaging and neuropsychology. *Brain, 127*, 851-859.

Svoboda, E., McKinnon, M.C., and Levine, B. (2006). The functional neuroanatomy of autobiographical memory: A meta-analysis. *Neuropsychologia, 44*, 2189-2208.

White, N.M., and McDonald, R.J. (2002). Multiple parallel memory systems in the brain of the rat. *Neurobiology of Learning and Memory, 77*, 125-184.