

**Neuropsychological Rehabilitation (PSYC33H3 S)**  
University of Toronto Scarborough  
Winter 2011

Course Director: Dr. Eva Svoboda  
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Office Hours: By appointment (1 hour before/after class)

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Course Websites: <http://intranet.utoronto.ca>  
<https://portal.utoronto.ca>

**Class Time and Location:** Thursdays 9:00 am – 11:00 am; AA 204

**Objective:** In this course, methods of neuropsychological rehabilitation that are used to treat cognitive deficits in a variety of domains (e.g., behavioural, attention, memory, sensory-perception, and executive function) will be examined. The importance of using a combination of theory/research and clinical/functional relevance in the rehabilitation process will be emphasized.

**Recommended Text:** Publication Manual of the American Psychological Association, 6<sup>th</sup> Ed. (5<sup>th</sup> edition is fine if you already have it)

**Evaluation:**

Evaluation	Due dates	Content	Course weight (%)
Midterm exam	March 3	Lectures + required readings	30%
Research paper	April 7	20 page (max) paper detailing the design and evaluation of an intervention to rehabilitate a neuropsychological deficit. This can be a case or group study from topics covered in class.	30%
Final exam	TBD	ALL lectures and readings	40%

**Exam Format:** Midterm and final examinations will include multiple choice, short answer and essay questions. Information from lectures and readings will be tested equally on both midterm and final exams. The final exam is cumulative on ALL material covered in the course. However, emphasis will be placed on material covered since the midterm.

**Missed Exam Policy:** Students who miss the midterm exam will have their grade prorated over the research paper and final exam. The prorating option will NOT be granted unless the instructor(s) receives appropriate documentation, such as a signed medical certificate or college registrar's note within one week of the missed exam. There will be no make-up exam for missed midterms.

**Penalty for lateness:** The research paper is due on April 7. Email the paper to Kris Romero by 5PM on the due date and submit the hard copy to the Psychology Department main office (the email will time stamp your paper submission). The penalty for lateness is 5% per day.

### Course Schedule

Date	Topic	*Required Readings
Jan 13	-Course overview: content, layout, marking scheme -What is neuropsychological rehabilitation?	<b>Taub</b> (2002). New treatments in neurorehabilitation founded on basic research <b>Wilson</b> (2002). Towards a comprehensive model of cognitive rehabilitation
Jan 20	Attention	<b>Sohlberg</b> (2001). Management of attention disorders <b>Singh-Curry</b> (2008). Rehabilitation of neglect
Jan 27	Memory Systems	<b>O'Connor</b> (1995). Clinical Differentiation of Amnesic Subtypes. <b>Schacter</b> (1994). What are the memory systems of 1994?
Feb 3	Memory Intervention – moderate to severe amnesia <b>Guest speaker:</b> patient	<b>Svoboda</b> (2010). A theory-driven training program in the use of emerging commercial technology: application to an adolescent with severe memory impairment <b>Ptak</b> (2010). Cognitive rehabilitation of episodic memory disorders: from theory to practice.
Feb 10	Memory Intervention Programs for Older Adults & MCI	<b>Troyer</b> (2008). Changing everyday memory behaviour in amnesic mild cognitive impairment: A randomized controlled trial <b>Glisky</b> (2008). Memory rehabilitation in older adults.
Feb 17	Program Evaluation	<b>Cicerone</b> (2005). Evidence-Based Cognitive Rehabilitation : Updated Review of the Literature From 1998 Through 2002 <b>Perdices</b> (2009). Single-subject designs as a tool for evidence-based clinical practice: Are they unrecognized and undervalued?
Feb 24	<b>READING WEEK</b>	<b>NO CLASS</b>
Mar 3	<b>MIDTERM EXAM</b>	All lectures and readings
Mar 10	Executive Functions <b>Guest speaker:</b> Dr. Deirdre Dawson, senior scientist, Kunin-Lunenfeld Applied Research Unit, Baycrest; associate professor, U of T	<b>Turner</b> (2004). Disorders of executive functioning and self-awareness <b>Levine</b> (2000). Rehabilitation of executive functioning: an experimental-clinical validation of goal management training.
Mar 17	Behavioural Interventions	<b>Barrick</b> (2006). Behavioural treatment of impaired functioning and behavioural symptoms <b>Camp</b> (2006). Spaced Retrieval: A model for dissemination of a cognitive intervention for persons with dementia
Mar 24	Visuoperception Interventions Kris Romero	<b>Francis</b> (2002). "Who's that girl?" Prosopagnosia, person-based semantic disorder, and the reacquisition of face identification ability <b>Zihl</b> (2000). Visual agnosia
Mar 31	Recovery & plasticity	<b>Corbetta</b> (2008). Functional brain imaging and neurological recovery <b>Robertson</b> (1999). Rehabilitation of brain damage: Brain plasticity and principles of guided recovery
Apr 7	EXAM REVIEW & PAPER DUE	Last half of class open for discussion about applying to graduate school, psychology, rehabilitation field in general ...

\*Readings will be posted online.

## Reading List

### January 13

**Taub**, E., Uswatte, G. & Elbert T. (2002). New treatments in neurorehabilitation founded on basic research. *Nature Reviews: Neuroscience*, 3, 228-235

**Wilson**, B.A. (2002). Towards a comprehensive model of cognitive rehabilitation. *Neuropsychological Rehabilitation*, 12, 97-110.

### January 20

**Sohlberg**, M. M., & Mateer, C. (2001). Management of attention disorders. In *Cognitive Rehabilitation: An Integrative Neuropsychological Approach* (pp. 125-161). New York, London: The Guilford Press.

**Singh-Curry**, V. & Husain, M. (2008). Rehabilitation of neglect. In D. T. Stuss, G. Winocur & I. H. Robertson (Eds.). *Neurorehabilitation: Evidence and Application* (2<sup>nd</sup> Ed.). (pp. 449-463). New York: Cambridge University Press.

### January 27

**O'Connor**, M., Verfaellie, M. & Cermak, L.S. (1995). Clinical Differentiation of Amnesic Subtypes. In A.D. Baddeley, B.A. Wilson & F.N.Watts (Eds.) *Handbook of Memory Disorders*. (pp. 53-80) Cambridge: John Wiley & Sons Ltd.

**Schacter**, D. L., & Tulving, E. (1994). What are the memory systems of 1994? In D. L. Schacter & E. Tulving (Eds.), *Memory Systems 1994* (pp. 1-38). Cambridge, Massachusetts: The MIT Press.

### February 3

**Svoboda**, E., Richards, B., Polsinelli, A., & Guger, S. (2010). A theory-driven training program in the use of emerging commercial technology: application to an adolescent with severe memory impairment. *Neuropsychological Rehabilitation*, 20(4), 562–586.

**Ptak**, R., Van der Linden, M., & Schnider, A. (2010). Cognitive rehabilitation of episodic memory disorders: from theory to practice. *Frontiers in Human Neuroscience*, 4, 1-11.

### February 10

**Troyer**, A. K., Murphy, K.J., Anderson, N.D., Moscovitch, M., & Craik, F.I.M. (2008). Changing everyday memory behaviour in amnesic mild cognitive impairment: A randomised controlled trial. *Neuropsychological Rehabilitation*, 18(1), 65-88.

**Glisky**, E.L. & Glisky, M.L. (2008). Memory rehabilitation in older adults. In D.T. Stuss, G. Winocur and I.H. Robertson (Eds.). *Cognitive Neurorehabilitation: Evidence and Application* (2<sup>nd</sup> ed.). (pp. 541-561). New York: Cambridge University Press..

### February 17

**Cicerone**, K. D., Dahlberg, C., Malec, J.F., et al., (2005). Evidence-Based Cognitive Rehabilitation : Updated Review of the Literature From 1998 Through 2002. *Archives of Physical and Medical Rehabilitation*, 86, 1681-1692.

**Perdices**, M., & Tate, R.L. (2009). Single-subject designs as a tool for evidence-based clinical practice: Are they unrecognized and undervalued? *Neuropsychological Rehabilitation* 19(6), 904–927.

### March 10

**Turner, G.R. & Levine, B. (2004).** Disorders of executive functioning and self-awareness. In Ponsford, J. (Ed) *Cognitive and Behavioral Rehabilitation: From Neurobiology to Clinical Practice*. (pp. 224-268). New York: Guilford Press

**Levine, B., Robertson, I. H., Clare, L., Carter, G., Hong, J., Wilson, B. A., et al. (2000).** Rehabilitation of executive functioning: an experimental-clinical validation of goal management training. *Journal of the International Neuropsychological Society*, 6(3), 299-312.

### **March 17**

**Camp, C.J. (2006).** Spaced Retrieval: A model for dissemination of a cognitive intervention for persons with dementia. In Attix, D K. Welsh-Bohmer, K. A. (Eds). *Geriatric Neuropsychology* (pp. 275-292). New York: Guilford Publications

**Barrick, A.L. (2006)** Behavioral treatment of impaired functioning and behavioural symptoms. In Attix, D. K. Welsh-Bohmer, K. A. (Eds.). *Geriatric Neuropsychology* (pp. 367-393). New York: Guilford Publications

### **March 24**

**Francis, D.R., Riddoch, M.M. & Humphreys, G.W. (2002).** “Who’s that girl?” Prosopagnosia, person-based semantic disorder, and the reacquisition of face identification ability. *Neuropsychological Rehabilitation*, 12, 1-26.

**Zihl, J. (2000).** Visual agnosia. In *Rehabilitation of Visual Disorders after Brain Injury (Neuropsychological Rehabilitation: A Modular Handbook)* (pp. 133-150). East Sussex UK: Psychology Press.

### **March 31**

**Corbetta, M. (2008).** Functional brain imaging and neurological recovery. In D. T. Stuss, G. Winocur & I. H. Robertson (Eds.), *Cognitive Neurorehabilitation: Evidence and application* (Second ed.) (pp. 162-181). New York: Cambridge University Press.

**Robertson, I.H., Murre, J.M.J. (1999).** Rehabilitation of brain damage: Brain plasticity and principles of guided recovery. *Psychological Bulletin*, 125(5), 544-575.

## **Research Papers**

### **Objectives**

Writing a research paper will help you achieve three important objectives: (1) To expand your knowledge of neuropsychological invention by focusing on an area that is of particular interest to you, (2) To further develop your skills as a critical reader of psychological research, (3) To develop your scientific writing skills.

### **Research Paper 1: Design a neuropsychological intervention**

#### **General Requirements**

In the research paper you should review critically an area of neuropsychological rehabilitation with respect to interventions designed to treat a neuropsychological deficit covered in the course. Choose from the general topics of attention, memory, language, motor, executive, perceptual, etc. and decide on a deficit within one of these domains to address with a neuropsychological intervention. You will design an intervention to rehabilitate the neuropsychological deficit of interest, evaluate the efficacy of your intervention (in which you will generate mock data) and critically discuss your findings in the context of the current literature in the field. A list of research topics chosen by prior students is provided.

#### **Specific Requirements**

- The research paper should be a maximum of 20 double-spaced pages in length (not including references, tables or figures generated)
- Use 12 point font, Times New Roman.
- You must have a minimum of 10 primary sources (journal articles) in your reference section. The references should be mainly from the 1990s and 2000s.

### **Required Sections of the Research Paper**

The research paper should be written as if it were a peer-reviewed journal article, in proper APA format.

**Abstract.** One paragraph, approximately 120 words in length, that briefly describes the area of investigation, type of participant(s), the presenting problem, the nature of the intervention and lastly the results and the significance of those results. Put the abstract on a separate page immediately following the title page.

**Introduction.** This section should describe the research area and findings from previous studies. The literature review should also discuss an issue or question that needs to be addressed in that area and provide a clear rationale for the proposed study. It should also include generally the theory behind the rehabilitative approach that is used in the study.

**Methods:** This section should include a description of the participant(s) and their presenting problem, a description of any equipment and how it was used, as well as a description of how the intervention was applied and specific description of the independent and dependent variables measured.

**Results (mock data you generate).** This section should describe your findings. You will generate mock data based upon what you might reasonably expect to have happened. Provide a table or a graph to represent the data along with a verbal explanation of the results.

**Discussion.** Discuss and review your findings in the context of what is currently known in the field. Include an explanation of how well the results fit the specific hypotheses, limitations of the study, and other theoretical issues. Try to highlight the significance / contribution of your research to the field and suggest future investigations.

**References.** You must have at least 10 primary sources (journal articles). The references should be mainly from the 1990s and 2000s.

### **Use APA Format**

You should use the guidelines for scientific writing that have been developed by the American Psychological Association (APA). It is recommended that you consult the Publication Manual, 6<sup>th</sup> edition of the APA to determine the appropriate methods for citing research in your research paper and for creating your list of references.

**Neuropsychological Rehabilitation**  
**Some suggestions of research topics chosen by previous students**

Multiple Sclerosis and Attention: A Computer Training Program for Sustained Attention Deficits in Multiple Sclerosis Patients

Improving memory in old age by positive self stereotyping

The Effect of Constraint-induced Movement Therapy and Limb Activation Training on Adolescent Patients with Motor Neglect

Treatment of Attention Deficit Hyperactivity Disorder through Cognitive Rehabilitation

Hemineglect: Experimental Alert Study Design

Motor Error Awareness Therapy and Goal Management Training in Early-stage Huntington's Disease Patients: A Novel Approach to Motor Disturbances

The Efficacy of Limb Activation Training for the Treatment of Upper-Body Hemiplegia Associated with Unilateral Visual Hemineglect

Antioxidants and Focused Memory Training: An Attempt to Impede the Progression from MCI to Alzheimer's Disease

Visual Restitution Training with Attentional Cueing Causes Restoration of Vision in Patients with Visual Defects

Increasing the Autonomy of Amnesic Individuals: An Errorless Learning/Vanishing Cues Rehabilitation Program

Memory and Lifestyle Intervention in MS Patients

A multifaceted approach to rehabilitation for MCI patients

Employing Video Games to Maximize Spontaneous Recovery of Cognitive Functions in Traumatically Brain Injured Individuals

The effects of education, concentration and motivation in the cognitive rehabilitation of elderly with late-life depression

Parkinson's Disease and Freezing of Gait Phenomenon

Effect of stress on cognitive functions and stress management in patients with cognitive disorders

Naturalistic neuropsychological rehabilitation of the Traumatically Brain-Injured Individuals

Behavioural Approaches to the treatment of a patient with Pick's Disease