

Neuropsychological Rehabilitation (PSYC33H3 S)
University of Toronto Scarborough
Winter 2014

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

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Office Hours: By appointment (in person or online)

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

Class Time and Location: Thursdays 9:00 am – 11:00 am; BV 355

Objective: Neuropsychological interventions are discussed against a backdrop of evidence-based practice, relevant neuropsychological theory and research. The course examines interventions across a number of cognitive domains including attention, visuoception, memory (healthy aging, mild cognitive impairment and amnesia), language, executive function and behavioural or emotional disorders. Other relevant topics in neuropsychological rehabilitation are also covered including program evaluation methodology, neuroplasticity and recovery.

Recommended Text: Publication Manual of the American Psychological Association, 6th Ed.

Evaluation:

Evaluation	Due dates	Content	Course weight (%)
Midterm exam	February 27	Lectures + required readings	30%
Research paper	April 3	20 page (max) paper detailing the design and evaluation of an intervention for 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 and short answer 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 3rd. Email the paper to Ron Chu by 5PM on the due date. The penalty for lateness is 5% per day.

Course Schedule

Date	Topic	*Required Readings
Jan 9	-Course overview: content, layout, marking scheme -What is neuropsychological rehabilitation?	Wilson (2008). Neuropsychological rehabilitation Wilson (2011). Cutting edge' developments in neuropsychological rehabilitation and possible future directions
Jan 16	Attention & neglect	von Bastian (2013). Effects and mechanisms of working memory training: a review Singh-Curry (2008). Rehabilitation of neglect
Jan 23	Memory Systems	Rosenbaum (2012). The amnesias. Wilson (2014). Jose David's story - Life After Brain Injury: Survivor's stories
Jan 30	Memory Intervention – moderate to severe amnesia Topographical disorientation training – case study	Svoboda (2012). PDA and smartphone use by individuals with moderate-to-severe memory impairment: application of a theory-driven training programme. Ptak (2010). Cognitive rehabilitation of episodic memory disorders: from theory to practice.
Feb 6	Memory Intervention Older Adults and MCI	Troyer (2008). Changing everyday memory behaviour in amnesic mild cognitive impairment: A randomized controlled trial Glisky (2008). Memory rehabilitation in older adults.
Feb 13	Program Evaluation Guest speaker: Dr. Kris Romero; post-doctoral fellow, Sunnybrook Health Sciences Centre (former co-op student, UTSC)	Cicerone (2011). Evidence-based cognitive rehabilitation: updated review of the literature from 2003 through 2008. Perdices (2009). Single-subject designs as a tool for evidence-based clinical practice: Are they unrecognized and undervalued?
Feb 20	READING WEEK	NO CLASS
Feb 27	MIDTERM EXAM	All lectures and readings to date
Mar 6	Executive Function Guest speaker: Dr. Emily Nader, post-doctoral fellow, Kunin-Lunenfeld Applied Research Unit, Baycrest	Manly (2012). Rehabilitation of executive function and social cognition impairments after brain injury. Dawson (2009). Using the Cognitive Orientation to Occupational Performance (CO-OP) with adults with executive dysfunction following traumatic brain injury
Mar 13	Speech language pathology Guest speaker: Susan Watt. Speech language pathologist, Stroke Service, Toronto Rehabilitation Inst.	Berthier (2011). Neuroscience insights improve neurorehabilitation of post stroke aphasia. Marshall (2005). Can speech and language therapy with aphasic people affect activity and participation levels?
March 20	Behaviour management in people with dementia Guest speaker: Dr. Colleen Ray, neuropsychologist, Baycrest	Bediou (2012). A Comparison of Facial Emotion Processing in Neurological and Psychiatric Conditions Bozeat (2000). Which neuropsychiatric and behavioural features distinguish frontal and temporal variants of frontotemporal dementia from Alzheimer's disease? Woolley (2007). Binge eating is associated with right orbitofrontal-insular-striatal atrophy in frontotemporal dementia – OPTIONAL READING

Mar 27	Recovery and neuroplasticity	O'Connell (2011). Plasticity of high-order cognition. Robertson (1999). Rehabilitation of brain damage: Brain plasticity and principles of guided recovery.
Apr 3	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 9

Wilson, B. A. (2011). Cutting edge' developments in neuropsychological rehabilitation and possible future directions. *Brain Impairment*, 12(1), 33–42.

Wilson, B. A. (2008). Neuropsychological rehabilitation. *Annual Review in Clinical Psychology*, 4, 141–162.

January 16

von Bastian, C. C., & Oberauer, K. (2013). Effects and mechanisms of working memory training: a review. *Psychological research*. doi: 10.1007/s00426-013-0524-6

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

January 23

Rosenbaum, R. S., Murphy, K. J. and Rich, J. B. (2012). The amnesias. *Wiley Interdisciplinary Reviews: Cognitive Science*, 3 (1), 47-63.

Wilson, B. A. & Jaramillo, J. D. (2014). Jose David's Story: From medical student to medical anthropologist. In Wilson, B. A., Winegardner, J. & Ashworth, F. (Eds.). *Life After Brain Injury: Survivor's stories*. (pp. 63-74). New York: Psychology Press.

January 30

Svoboda, E., Richards, B., Leach, L., & Mertens, V. (2012). PDA and smartphone use by individuals with moderate-to-severe memory impairment: application of a theory-driven training programme. *Neuropsychological rehabilitation*, 22(3), 408-427.

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 6

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* (2nd ed.). (pp. 541-561). New York: Cambridge University Press.

February 13

Cicerone, K. D., Langenbahn, D. M., Braden, C., Malec, J. F., Kalmar, K., Fraas, M., . . . Ashman, T. (2011). Evidence-based cognitive rehabilitation: updated review of the literature from 2003 through 2008. *Archives of physical medicine and rehabilitation*, 92(4), 519-530.

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 6

Manly, T., Murphy, F. (2012). Rehabilitation of executive function and social cognition impairments after brain injury. *Current Opinion in Neurology*, 25(6): 656-661.

Dawson, D. R., Gaya, A., Hunt, A., Levine, B., Lemsky, C., & Polatajko, H. J. (2009). Using the cognitive orientation to occupational performance (CO-OP) with adults with executive dysfunction following traumatic brain injury. *Canadian journal of occupational therapy*, 76(2), 115-127.

March 13

Berthier, M.L., Pulvermuller, F. (2011). Neuroscience insights improve neurorehabilitation of poststroke aphasia. *Nature Reviews. Neurology*, 7(2): 86-97.

Marshal, J. (2005). Can speech and language therapy with aphasic people affect activity and participation levels?: A review of the literature. In P.W. Halligan, D.T. Wade (Eds.). *Effectiveness of Rehabilitation for Cognitive Deficits* (pp. 195-207). New York: Oxford University Press.

March 20

Bediou, B., Brunelin, J., d'Amato, T., Fecteau, S., Saoud, M., Henaff, M. –A. & Krolak-Salmon, P. (2012). A comparison of facial emotion processing in neurological and psychiatric conditions. *Frontiers in Psychology*, 3(98): 1-10.

Bozeat, S., Gregory, C. A., Lambon Ralph, M. A. & Hodges, J. R. (2000). Which neuropsychiatric and behavioural features distinguish frontal and temporal variants of frontotemporal dementia from Alzheimer's disease? *Journal of Neurology Neurosurgery and Psychiatry*. 69:178–186.

Woolley, J. D., Gorno-Tempini, M. -L., Seeley, W. W., Rankin, K., Lee, S. S., Matthews, B. R. and Miller, B. L. (2007). Binge eating is associated with right orbitofrontal-insular-striatal atrophy in frontotemporal dementia. *Neurology* 69: 1424-1433 – **OPTIONAL READING**

March 27

O’Connell, R. G., Robertson, I. H. (2011). Plasticity of high-order cognition: A review of experience-induced remediation studies for executive deficits. In S. A. Raskin (Ed.). *Neuroplasticity and rehabilitation* (pp. 233-256). New York: The Guilford 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 intervention 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, behaviour, language, executive function, perception, motor, etc. and decide on a deficit within one of these domains to address with a neuropsychological intervention. You will design an intervention to ameliorate 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, 6th 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: Let's dance.

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