

**Neuropsychological Rehabilitation (PSYC33H3 S)**  
University of Toronto, Scarborough  
Winter 2017

Course Directors: Dr. Eva Svoboda

Office Hours: By appointment (1 hour before or after class; online/ phone)

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

**Class Time and Location:** Thursdays 9:00 am – 11:00 am; MW 223

**Objective:** Interventions in the field of Neuropsychological Rehabilitation are discussed against a backdrop of evidence-based practice, relevant neuropsychological and psychological theory and research. The course examines interventions across the most frequently impaired cognitive domains including memory (healthy aging, mild cognitive impairment and acquired brain injury), attention/executive function (acquired brain injury/traumatic brain injury, concussion), behaviour-regulation (acquired brain injury/traumatic brain injury) and language. Other relevant topics in neuropsychological rehabilitation are also covered including adjustment to chronic illness and psychotherapeutic interventions, program evaluation, and neuroplasticity.

**Recommended Text:** Publication Manual of the American Psychological Association, 6<sup>th</sup> Ed.

**Evaluation:**

Evaluation	Due dates	Content	Course weight (%)
Midterm exam Research paper	February 16 March 30	Lectures + required readings 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% 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 on both midterm and final exams. The final exam is cumulative on ALL material covered in the course. However more emphasis will be placed on material covered since the midterm.

**Missed Exam Policy:** Students who miss an exam will be given the option to write an alternate exam. The alternate exam 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.

<b>Date</b>	<b>Topic</b>	<b>*Required Readings</b>
Jan 5	Introduction to neuropsychological Rehabilitation	<b>Wilson</b> (2008). Neuropsychological rehabilitation <b>Wilson</b> (2011). Cutting edge' developments in neuropsychological rehabilitation and possible future directions
Jan 12	Memory Intervention – moderate to severe memory impairment	<b>Svoboda</b> (2012). PDA and smartphone use by individuals with moderate-to-severe memory impairment: application of a theory-driven training programme. <b>Evans</b> (2014) Memory dysfunction
Jan 19	Memory Intervention Older Adults, MCI, Dementia <b>Guest speaker:</b> Dr. Kelly Murphy; Baycrest, U of T, Toronto Brain Health	<b>Giebel</b> , (2015). Translating cognitive and everyday activity deficits into cognitive interventions in mild dementia and mild cognitive impairment. <b>Murphy</b> (In press). Multicomponent approaches to secondary prevention of dementia.
Jan 26	Concussion assessment and rehabilitation <b>Guest speaker:</b> Dr. Sabrina Lombardi; Toronto Rehabilitation Inst. & Toronto Brain Health	<b>McCrory</b> (2013). Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich. <b>McCrea</b> (2008). Mild traumatic brain injury and postconcussion syndrome – select readings.
Feb 2	Executive function, assessment, neuroimaging, rehabilitation Dr. Gary Turner, York University	<b>Arnemann</b> (2015). Functional brain network modularity predicts response to cognitive training after brain injury <b>Turner</b> (2014). Neurorehabilitation of executive functions
Feb 9	Behaviour Management in ABI and dementia Dr. Sharon Jankey Clinical Director, ABI Behaviour Services, West Park	<b>Sabaz</b> (2014). Prevalence, comorbidities, and correlates of challenging behavior among community-dwelling adults with severe traumatic brain injury: a multicenter study. <b>Ylvisaker</b> (2003). Positive supports for people who experience behavioral and cognitive disability after brain injury: a review
<b>Feb 16</b>	<b>MIDTERM EXAM</b>	All lectures and readings to date
Feb 23	<b>READING WEEK</b>	<b>NO CLASS</b>
Mar 2	Program Evaluation	<b>Cicerone</b> (2011). Evidence-based cognitive rehabilitation: updated review of the literature from 2003 through 2008. <b>Perdices</b> (2009). Single-subject designs as a tool for evidence-based clinical practice: Are they unrecognized and undervalued?
Mar 9	Adjustment to chronic illness and psychotherapeutic Interventions in ABI	<b>Livneh</b> (2005). Psychosocial adaptation to chronic illness and disability. A primer for counselors. <b>Ruff</b> (2013) Selecting the appropriate psychotherapies for individuals with traumatic brain injury: What works and what does not?
Mar 16	Language, assessment and intervention Susan Watt. SLP, Stroke Service, Toronto Rehabilitation Inst.	<b>Berthier</b> (2011). Neuroscience insights improve neurorehabilitation of post stroke aphasia. <b>Marshall</b> (2005). Can speech and language therapy with aphasic people affect activity and participation levels?
Mar 23	Neuroplasticity	<b>Hummel</b> (2014) Brain stimulation <b>Robertson</b> (1999). Rehabilitation of brain damage: Brain plasticity and principles of guided recovery.
<b>Mar 30</b>	<b>PAPER DUE &amp; EXAM REVIEW</b>	Last half of class open for discussion about applying to graduate school, psychology, rehabilitation field in general ...

**Penalty for lateness:** The research paper is due on March 30th. Email the paper to Kyrsten Grimes by 11:59PM, on the due date. Please Cc Dr. Svoboda. The penalty for lateness is 5% per day.

### Course Schedule

\*Readings will be posted online.

## Reading List

### January 5

**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 12

**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.

**Evans, J.J.** (2014) Memory dysfunction. In Selzer, M., Clarke, S., Cohen, L., Kwakkel, G., & Miller, R. (eds.) *Textbook of Neural Repair and Rehabilitation*. Cambridge: Cambridge University Press, pp. 478–488.

### January 19

**Giebel, C., & Challis, D.** (2015). Translating cognitive and everyday activity deficits into cognitive interventions in mild dementia and mild cognitive impairment. *International journal of geriatric psychiatry*, 30(1), 21-31.

**Murphy, K.J.** (In press). Multicomponent approaches to secondary prevention of dementia. In Smith, G.E. & Farias, S (eds.) *APA Handbook of Dementia*. Washington: APA Books.

### January 26

**McCrory P, et al.** (2013). Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012. *British Journal of Sports Medicine*. 47, 250–258.

[read up until pg 6, Section 2]

**McCrea, M.** (2008). *Mild traumatic brain injury and postconcussion syndrome: The new evidence base for diagnosis and treatment*. Oxford University Press, USA.

[Select brief chapters]

**February 2**

**Arnemann**, K. L., Chen, A. J.-W., Novakovic-Agopian, T., Gratton, C., Nomura, E. M., & D'Esposito, M. (2015). Functional brain network modularity predicts response to cognitive training after brain injury. *Neurology*, *84*(15), 1568–1574.  
<http://doi.org/10.1212/WNL.0000000000001476>

**Turner**, G.R. and D'Esposito, M. (2014). Neurorehabilitation of executive functions. In Selzer, M., Clarke, S., Cohen, L., Kwakkel, G., and Miller, R. (eds.) *Textbook of Neural Repair and Rehabilitation*. Cambridge: Cambridge University Press, pp. 489–499.

**February 9**

**Sabaz**, M., Simpson, G. K., Walker, A. J., Rogers, J. M., Gillis, I. & Strettles, B. (2014). Prevalence, comorbidities, and correlates of challenging behavior among community-dwelling adults with severe traumatic brain injury: a multicenter study. *Journal of Head Trauma Rehabilitation*, *29*(2): E19-30.

**Ylvisaker**, M., Jacobs, H. E., & Feeney, T. (2003). Positive supports for people who experience behavioral and cognitive disability after brain injury: a review. *The Journal of head trauma rehabilitation*, *18*(1), 7-32.

**March 2**

**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 9**

**Livneh**, H. & Antonak, R. F. (2005). Psychosocial adaptation to chronic illness and disability. A primer for counselors. *Journal of Counseling Development*, *83*, 12-20.

**Ruff**, R. (2013). Selecting the appropriate therapies for individuals with traumatic brain injury: What works and what does not? *NeuroRehabilitation*, *32*(4), 771-779.

**March 16**

**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*. New York: Oxford University Press, pp. 195-207.

### **March 23**

**Hummel, F.C.** and Celnik, P. (2014). Brain stimulation. in Selzer, M., Clarke, S., Cohen, L., Kwakkel, G., and Miller, R. (eds.) *Textbook of Neural Repair and Rehabilitation*. Cambridge: Cambridge University Press, pp. 141–149.

*[read each section broadly, pay attention to gist of each section]*

**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.

*[skim the technicalities of how analyses/theory was derived]*

## **Research Paper**

### **Objectives**

Writing a research paper will help you achieve three important objectives: (1) To expand your knowledge of neuropsychological and behaviour change interventions 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; and (3) To develop your scientific writing skills.

### **Research Paper: Design a neuropsychological/behaviour change 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/cognitive deficit covered in the course. Choose from the general topics of memory, behaviour, executive function, attention, language, motor function, 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 or associated psychological challenge (anxiety, depression, adjustment difficulties, lack of insight), 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 between a minimum of 10 to 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 disorder, its deficits, and why it is important to address them. The research area and findings from previous intervention studies should be briefly reviewed. 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. The hypotheses should be clearly stated.

**Methods:** This section should include a description of the participant(s) and their presenting problem, inclusion/exclusion criteria, a description of any equipment and how it was used, research design, statistical analyses (if any) that you would use, a description of how the intervention was applied, assessment or outcome measures used, time intervals and 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 happen. Provide a table or a graph to represent the data along with a verbal explanation of the results. Although no

actual statistics are required for the paper, for each description or finding, if applicable, please state whether the difference or change was significant. Similarly this should be indicated in the figure and/or table.

**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 directions/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 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

Adapting the use of Virtual Environments for Patients with executive dysfunction

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

Improving sustained attention and goal-focused behaviour in TBI with mindfulness-based training exercises

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

Improving Memory in Patients with Alzheimer Disease Using an External Aid and Spaced Retrieval Memory Strategies

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

Towards a Comprehensive Preventative Treatment Model for Dementia:  
The Utility of Yoga and Mindfulness Meditation in Prolonging the Onset of Dementia

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 Traumatically Brain-Injured Individuals

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

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