

Neurobehavioral training references

By Greg Siegle, 12/15/10-10/18/11

General: Literature

- Regulatory control strategies more generally: (Aldao et al.; Zelazo and Cunningham, in press)
- Neurobehavioral training: (Siegle et al., 2007)

Attention Training

- Literature:
 - Attention training mechanisms
 - Neuroimaging: (Dux et al., 2009; Browning et al., 2010)
 - Costs & benefits: (Van Bockstaele et al., 2010)
 - Anxiety:
 - Review: (Bar-Haim, 2010) – available at www.tau.ac.il/~yair1/PDF/43.pdf
 - Mostly dotprobe. (MacLeod et al., 2007; Li et al., 2008; Amir et al., 2009; Schmidt et al., 2009; See et al., 2009; Reese et al., 2010).
 - Occasionally augmented pharmacologically: (Davis et al., 2006; Behar et al., 2010)
 - Depression
 - Attentional bias: (Baert et al., 2010)
 - Attention training: (Papageorgiou and Wells, 2000)
 - Smokers: (Field et al., 2009)
 - Chronic pain: (Dehghani et al., 2004)
 - Outside psychiatry – healthy people: (Owen et al.; Dandeneau et al., 2007; Pilly et al., 2010)
- Getting the interventions
 - <http://selfesteemgames.mcgill.ca/games/sematrix.htm> - Interventions described in (Dandeneau et al., 2007)
 - iPhone/Android application currently in testing phases <http://handheldtrainingstudy.com/>
 - Software to create the original attentional probe task used in (MacLeod et al., 2007): <http://www.psy.uwa.edu.au/labs/cogemo/AttProbe1.html>
- On-line discussion group: <http://www.linkedin.com/groups?about=&gid=3170828>

Interpretation Training & “Cognitive bias modification”

- Literature
 - Review: (Hoppitt et al., 2010). Commentary: (Koster et al., 2009; MacLeod et al., 2009)
 - Basic mechanisms/moderators (Grey and Mathews, 2000; Holmes et al., 2006; Grey and Mathews, 2009; Standage et al., 2009; Hoppitt et al., 2010; Salemink and van den Hout, 2010; Standage et al., 2010)
 - Healthy adolescents: (Lothmann et al., 2011)
 - Anxiety: (Holmes et al., 2006; Mackintosh et al., 2006; Wilson et al., 2006; Murphy et al., 2007; Grey and Mathews, 2009; Hayes et al., 2010; Steinman and Teachman, 2010)
 - Depression: (Holmes et al., 2009; Lang et al., 2009; Watkins et al., 2009; Baert et al., 2010). (Holmes et al., 2006; Holmes et al., 2009; Lang et al., 2009)
 - Schizophrenia: (Steel et al., 2010)

Other

- Perspective Broadening: (Schartau et al., 2009)
- Prism adaptation for spatial cognition disorders (Rode et al., 2006)

Cognitive Skills (e.g., working memory) Training

- Literature
 - Schizophrenia:
 - Mostly cognitive training: (Delahunty et al., 1993; Delahunty and Morice, 1996; Bell et al., 2003; Hogarty et al., 2004; Bell et al., 2007; Greig et al., 2007; Kurtz et al., 2007; Bell et al., 2008; Cavallaro et al., 2009; Draper et al., 2009; Galderisi et al., 2009; Xu et al., 2010; Haut et al., 2010, in press). Some with neuroimaging: (Eack et al., 2010; Haut et al., 2010, in press)
 - Older literature: Book: (Parentâe and Herrmann, 2003). Review: (Twamley et al., 2003)
 - Affect recognition training: (Habel et al., 2010)
 - Social skills training: (Galderisi et al., 2009; Granholm et al., 2009)
 - Depression: (Siegle et al., 2007). Speed of processing: (Wolinsky et al., 2009)
 - Smoking: (McHugh et al., 2010)
 - Sexual dysfunction: (Beard and Amir, 2010)
 - Hypochondriasis: (Papageorgiou and Wells, 1998)
 - Outside psychiatry – healthy people: (Owen et al.; Pilly et al., 2010)
 - Older adults: (Buschkuhl et al., 2008; Jaeggi et al., 2008)
 - Personalization
 - <http://www.brainnet.net/publications/latest-publications/#>
- Getting the interventions
 - http://www.bbc.co.uk/labuk/results/braintestbritain/4_brain_training_games.html
 - <http://www.braintrain.com/>
 - <http://www.lumosity.com/>
 - <http://www.shinylearning.co.uk/memorygames/index.shtml>

EEG-based Neurofeedback

- Literature
 - For regulatory control: (Johnston et al.; Lubar, 1997; Yoo and Jolesz, 2002; Cho et al., 2004; Congedo et al., 2004)
 - Basic Effects on EEG: (Egner et al., 2004)
 - Review: (Hirshberg et al., 2005; Heinrich et al., 2007)
 - ADHD: (Lubar et al., 1995; Cho et al., 2002; Fuchs et al., 2003; Butnik, 2005)
 - Anxiety: (Hammond, 2005)
 - Learning disability: (Fernandez et al., 2003)
 - Alcoholism & Substance use: (Saxby and Peniston, 1995; Trudeau, 2005)
 - Chronic Fatigue: (James and Folen, 1996; Hammond, 2001)
 - Depression: (Baehr et al., 1997)
- Getting equipment
 - Ambulatory blue-tooth EEG via www.emotiv.com
 - With app-store purchase of emotive brain-activity-map
 - XWave iPhone app with 1-electrode system: <http://www.dosenation.com/listing.php?id=8130>
 - <http://www.brain-trainer.com/?gclid=COm9-6iX86sCFct-5QodIUJZKQ>
 - <http://www.brainmaster.com/?gclid=CJ7o7LGX86sCFYoDQAodoT5vKw>
 - <http://www.smartbraintech.com/store/pc/viewCategories.asp?idCategory=9&gclid=CPsukuSX86sCFTADQAoduCc9JA>

Mindfulness as training

- (Goldin and Gross)

Neurorehab

- Literature
 - Review: (Riddoch and Humphreys, 1994; Nadeau, 2002; Taub et al., 2002; van den Broek, 2005; Dietz, 2006; Floel and Cohen, 2006; Gonzalez Rothi and Barrett, 2006; Johnson and Stein, 2006; Arenth et al., 2007; Feng and Winters, 2007; Dimyan et al., 2008; Johnson, 2008; Mernoff, 2008; Ruff et al., 2008; Carabalona et al., 2009; Gaggioli et al., 2009; Kwakkel, 2009; Sinkaer and Popovic, 2009; Whyte et al., 2009; Flanagan, 2010; Gillen, 2010)
 - Stroke
 - With BCI: (Daly et al., 2009)
 - Reviews: (Good, 2003; Bonaiuti and Grimaldi, 2007; Ang et al., 2010; Gillen, 2010; Golden and Slezak, 2010)
 - TBI: (Murrey and Starzinski, 2004; Cernich et al., 2010; Hoffman et al., 2010; Pachalska et al., 2010)
 - MS: (Kidd and Thompson, 1997; Allen et al., 1998; Liu et al., 2003; Kesselring, 2004; Thompson, 2005; Penner et al., 2006)
 - Alcohol: (Allen et al., 1997)
 - Anomia - (Vitali et al., 2010)
 - Electrical injuries: (Cherington, 2005)
 - Aphasia - (Raymer et al., 2008)
 - Locked in syndrome - (Trojano et al., 2010)
 - ADHD: (Wang and Reid, 2010)
 - Neural transplantation... really... (Dobrossy et al., 2010)
 - PTSD: (Williams et al., 2003; Sherer et al., 2009)

References

- Aldao A, Nolen-Hoeksema S, Schweizer S** Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clin Psychol Rev* **30**: 217-237
- Allen DN, Goldstein G, Heyman RA, Tiziana R** (1998) Teaching memory strategies to persons with multiple sclerosis. *Journal of Rehabilitation Research and Development* **35**: 405-410
- Allen DN, Goldstein G, Seaton BE** (1997) Cognitive rehabilitation of chronic alcohol abusers. *Neuropsychology Review* **7**: 21-39
- Amir N, Beard C, Burns M, Bomyea J** (2009) Attention modification program in individuals with generalized anxiety disorder. *J Abnorm Psychol* **118**: 28-33
- Ang KK, Guan C, Chua KS, Ang BT, Kuah C, Wang C, Phua KS, Chin ZY, Zhang H** (2010) Clinical study of neurorehabilitation in stroke using EEG-based motor imagery brain-computer interface with robotic feedback. *Conf Proc IEEE Eng Med Biol Soc* **1**: 5549-5552
- Arenth PM, Ricker JH, Schultheis MT** (2007) Applications of functional near-infrared spectroscopy (fNIRS) to Neurorehabilitation of cognitive disabilities. *Clin Neuropsychol* **21**: 38-57
- Baehr E, Rosenfeld JP, Baehr R** (1997) The clinical use of an alpha asymmetry protocol in the neurofeedback treatment of depression: Two case studies. *Journal of Neurotherapy* **2**: 10-23
- Baert S, De Raedt R, Schacht R, Koster EH** Attentional bias training in depression: therapeutic effects depend on depression severity. *J Behav Ther Exp Psychiatry* **41**: 265-274
- Baert S, De Raedt R, Schacht R, Koster EH** (2010) Attentional bias training in depression: therapeutic effects depend on depression severity. *J Behav Ther Exp Psychiatry* **41**: 265-274
- Bar-Haim Y** (2010) Research review: Attention bias modification (ABM): a novel treatment for anxiety disorders. *J Child Psychol Psychiatry* **51**: 859-870
- Beard C, Amir N** (2010) Attention bias for sexual words in female sexual dysfunction. *J Sex Marital Ther* **36**: 216-226
- Behar E, McHugh RK, Peckham A, Otto MW** (2010) D-cycloserine for the augmentation of an attentional training intervention for trait anxiety. *J Anxiety Disord* **24**: 440-445
- Bell M, Bryson G, Wexler BE** (2003) Cognitive remediation of working memory deficits: durability of training effects in severely impaired and less severely impaired schizophrenia. *Acta Psychiatr Scand* **108**: 101-109
- Bell M, Fiszdon J, Greig T, Wexler B, Bryson G** (2007) Neurocognitive enhancement therapy with work therapy in schizophrenia: 6-month follow-up of neuropsychological performance. *J Rehabil Res Dev* **44**: 761-770
- Bell MD, Zito W, Greig T, Wexler BE** (2008) Neurocognitive enhancement therapy with vocational services: work outcomes at two-year follow-up. *Schizophr Res* **105**: 18-29
- Bonaiuti D, Grimaldi M** (2007) Neuroimaging: a new challenge in neurorehabilitation of stroke patients. *Eura Medicophys* **43**: 215-219
- Browning M, Holmes EA, Murphy SE, Goodwin GM, Harmer CJ** (2010) Lateral prefrontal cortex mediates the cognitive modification of attentional bias. *Biol Psychiatry* **67**: 919-925
- Buschkuehl M, Jaeggi SM, Hutchison S, Perrig-Chiello P, Dapp C, Muller M, Breil F, Hoppeler H, Perrig WJ** (2008) Impact of working memory training on memory performance in old-old adults. *Psychol Aging* **23**: 743-753
- Butnik SM** (2005) Neurofeedback in adolescents and adults with attention deficit hyperactivity disorder. *J Clin Psychol* **61**: 621-625
- Carabalona R, Castiglioni P, Gramatica F** (2009) Brain-computer interfaces and neurorehabilitation. *Stud Health Technol Inform* **145**: 160-176
- Cavallaro R, Anselmetti S, Poletti S, Bechi M, Ermoli E, Cocchi F, Stratta P, Vita A, Rossi A, Smeraldi E** (2009) Computer-aided neurocognitive remediation as an enhancing strategy for schizophrenia rehabilitation. *Psychiatry Res* **169**: 191-196
- Cernich AN, Kurtz SM, Mordecai KL, Ryan PB** (2010) Cognitive rehabilitation in traumatic brain injury. *Curr Treat Options Neurol* **12**: 412-423

- Cherington M** (2005) Neurorehabilitation of the multifaceted and complicated neurologic problems associated with lightning and electrical injuries. *NeuroRehabilitation* **20**: 1-2
- Cho BH, Kim S, Shin DI, Lee JH, Lee SM, Kim IY, Kim SI** (2004) Neurofeedback training with virtual reality for inattention and impulsiveness. *Cyberpsychol Behav* **7**: 519-526
- Cho BH, Ku J, Jang D, Lee J, Oh M, Kim H, Kim J, Kim I, Kim S** (2002) Clinical test for Attention Enhancement System. *Stud Health Technol Inform* **85**: 89-95
- Congedo M, Lubar JF, Joffe D** (2004) Low-resolution electromagnetic tomography neurofeedback. *IEEE Trans Neural Syst Rehabil Eng* **12**: 387-397
- Daly JJ, Cheng R, Rogers J, Litinas K, Hrovat K, Dohring M** (2009) Feasibility of a new application of noninvasive Brain Computer Interface (BCI): a case study of training for recovery of volitional motor control after stroke. *J Neurol Phys Ther* **33**: 203-211
- Dandeneau SD, Baldwin MW, Baccus JR, Sakellaropoulo M, Pruessner JC** (2007) Cutting stress off at the pass: reducing vigilance and responsiveness to social threat by manipulating attention. *J Pers Soc Psychol* **93**: 651-666
- Davis M, Ressler K, Rothbaum BO, Richardson R** (2006) Effects of D-cycloserine on extinction: translation from preclinical to clinical work. *Biol Psychiatry* **60**: 369-375
- Dehghani M, Sharpe L, Nicholas MK** (2004) Modification of attentional biases in chronic pain patients: a preliminary study. *Eur J Pain* **8**: 585-594
- Delahunty A, Morice R** (1996) Rehabilitation of frontal/executive impairments in schizophrenia. *Aust N Z J Psychiatry* **30**: 760-767
- Delahunty A, Morice R, Frost B** (1993) Specific cognitive flexibility rehabilitation in schizophrenia. *Psychol Med* **23**: 221-227
- Dietz V** (2006) Good clinical practice in neurorehabilitation. *Lancet Neurol* **5**: 377-378
- Dimyan MA, Dobkin BH, Cohen LG** (2008) Emerging subspecialties: neurorehabilitation: training neurologists to retrain the brain. *Neurology* **70**: e52-54
- Dobrossy M, Busse M, Piroth T, Rosser A, Dunnett S, Nikkhah G** (2010) Neurorehabilitation with neural transplantation. *Neurorehabil Neural Repair* **24**: 692-701
- Draper ML, Stutes DS, Maples NJ, Velligan DI** (2009) Cognitive adaptation training for outpatients with schizophrenia. *J Clin Psychol* **65**: 842-853
- Dux PE, Tombu MN, Harrison S, Rogers BP, Tong F, Marois R** (2009) Training improves multitasking performance by increasing the speed of information processing in human prefrontal cortex. *Neuron* **63**: 127-138
- Eack SM, Hogarty GE, Cho RY, Prasad KM, Greenwald DP, Hogarty SS, Keshavan MS** (2010) Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: results from a 2-year randomized controlled trial. *Arch Gen Psychiatry* **67**: 674-682
- Egner T, Zech TF, Gruzelier JH** (2004) The effects of neurofeedback training on the spectral topography of the electroencephalogram. *Clin Neurophysiol* **115**: 2452-2460
- Feng X, Winters JM** (2007) An interactive framework for personalized computer-assisted neurorehabilitation. *IEEE Trans Inf Technol Biomed* **11**: 518-526
- Fernandez T, Herrera W, Harmony T, Diaz-Comas L, Santiago E, Sanchez L, Bosch J, Fernandez-Bouzas A, Otero G, Ricardo-Garcell J, Barraza C, Aubert E, Galan L, Valdes R** (2003) EEG and behavioral changes following neurofeedback treatment in learning disabled children. *Clin Electroencephalogr* **34**: 145-152
- Field M, Duka T, Tyler E, Schoenmakers T** (2009) Attentional bias modification in tobacco smokers. *Nicotine Tob Res* **11**: 812-822
- Flanagan SR** (2010) The state of neurorehabilitation: past, present, and future. *PM R* **2**: 485-487
- Floel A, Cohen LG** (2006) Translational studies in neurorehabilitation: from bench to bedside. *Cogn Behav Neurol* **19**: 1-10

- Fuchs T, Birbaumer N, Lutzenberger W, Gruzelier JH, Kaiser J** (2003) Neurofeedback treatment for attention-deficit/hyperactivity disorder in children: a comparison with methylphenidate. *Appl Psychophysiol Biofeedback* **28**: 1-12
- Gaggioli A, Morganti F, Meneghini A, Pozzato I, Greggio G, Pigatto M, Riva G** (2009) Computer-guided mental practice in neurorehabilitation. *Stud Health Technol Inform* **145**: 195-208
- Galderisi S, Piegari G, Mucci A, Acerra A, Luciano L, Rabasca AF, Santucci F, Valente A, Volpe M, Mastantuono P, Maj M** (2009) Social skills and neurocognitive individualized training in schizophrenia: comparison with structured leisure activities. *Eur Arch Psychiatry Clin Neurosci*
- Gillen G** (2010) Rehabilitation research focused on neurorehabilitation. *Am J Occup Ther* **64**: 341-356
- Golden S, Slezak K** (2010) Making things possible. Technology plays a role in neurorehabilitation for stroke patients. *Rehab Manag* **23**: 10, 12-13
- Goldin PR, Gross JJ** Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion* **10**: 83-91
- Gonzalez Rothi LJ, Barrett AM** (2006) The changing view of neurorehabilitation: a new era of optimism. *J Int Neuropsychol Soc* **12**: 812-815
- Good DC** (2003) Stroke: promising neurorehabilitation interventions and steps toward testing them. *Am J Phys Med Rehabil* **82**: S50-57
- Granholt E, Ben-Zeev D, Link PC** (2009) Social disinterest attitudes and group cognitive-behavioral social skills training for functional disability in schizophrenia. *Schizophr Bull* **35**: 874-883
- Greig TC, Zito W, Wexler BE, Fiszdon J, Bell MD** (2007) Improved cognitive function in schizophrenia after one year of cognitive training and vocational services. *Schizophr Res* **96**: 156-161
- Grey S, Mathews A** (2000) Effects of training on interpretation of emotional ambiguity. *Q J Exp Psychol A* **53**: 1143-1162
- Grey SJ, Mathews AM** (2009) Cognitive bias modification - priming with an ambiguous homograph is necessary to detect an interpretation training effect. *J Behav Ther Exp Psychiatry* **40**: 338-343
- Habel U, Koch K, Kellermann T, Reske M, Frommann N, Wolwer W, Zilles K, Shah NJ, Schneider F** (2010) Training of affect recognition in schizophrenia: Neurobiological correlates. *Soc Neurosci* **5**: 92-104
- Hammond DC** (2001) Treatment of chronic fatigue with neurofeedback and self-hypnosis. *NeuroRehabilitation* **16**: 295-300
- Hammond DC** (2005) Neurofeedback with anxiety and affective disorders. *Child Adolesc Psychiatr Clin N Am* **14**: 105-123
- Haut KM, Lim KO, MacDonald AW** (2010, in press) Prefrontal cortical changes following cognitive training in patients with chronic schizophrenia: Effects of practice, generalization, and specificity. *Neuropsychopharmacology*
- Hayes S, Hirsch CR, Krebs G, Mathews A** (2010) The effects of modifying interpretation bias on worry in generalized anxiety disorder. *Behav Res Ther* **48**: 171-178
- Heinrich H, Gevensleben H, Strehl U** (2007) Annotation: neurofeedback - train your brain to train behaviour. *J Child Psychol Psychiatry* **48**: 3-16
- Hirshberg LM, Chiu S, Frazier JA** (2005) Emerging brain-based interventions for children and adolescents: overview and clinical perspective. *Child Adolesc Psychiatr Clin N Am* **14**: 1-19, v
- Hoffman SW, Shesko K, Harrison CR** (2010) Enhanced neurorehabilitation techniques in the DVBIC Assisted Living Pilot Project. *NeuroRehabilitation* **26**: 257-269
- Hogarty GE, Flesher S, Ulrich R, Carter M, Greenwald D, Pogue-Geile M, Kechavan M, Cooley S, DiBarry AL, Garrett A, Parepally H, Zoretich R** (2004) Cognitive enhancement therapy for schizophrenia: effects of a 2-year randomized trial on cognition and behavior. *Arch Gen Psychiatry* **61**: 866-876
- Holmes EA, Lang TJ, Shah DM** (2009) Developing interpretation bias modification as a "cognitive vaccine" for depressed mood: imagining positive events makes you feel better than thinking about them verbally. *J Abnorm Psychol* **118**: 76-88

- Holmes EA, Mathews A, Dalgleish T, Mackintosh B** (2006) Positive interpretation training: effects of mental imagery versus verbal training on positive mood. *Behav Ther* **37**: 237-247
- Hoppitt L, Mathews A, Yiend J, Mackintosh B** (2010) Cognitive bias modification: the critical role of active training in modifying emotional responses. *Behav Ther* **41**: 73-81
- Jaeggi SM, Buschkuhl M, Jonides J, Perrig WJ** (2008) Improving fluid intelligence with training on working memory. *Proc Natl Acad Sci U S A* **105**: 6829-6833
- James LC, Folen RA** (1996) EEG biofeedback as a treatment for chronic fatigue syndrome: a controlled case report. *Behav Med* **22**: 77-81
- Johnson DA** (2008) Open thinking in neurorehabilitation. *Dev Neurorehabil* **11**: 93-94
- Johnson DA, Stein DG** (2006) Developmental neurorehabilitation. *Pediatr Rehabil* **9**: 173
- Johnston SJ, Boehm SG, Healy D, Goebel R, Linden DE** Neurofeedback: A promising tool for the self-regulation of emotion networks. *Neuroimage* **49**: 1066-1072
- Kesselring J** (2004) Neurorehabilitation in multiple sclerosis--what is the evidence-base? *J Neurol* **251 Suppl 4**: IV25-29
- Kidd D, Thompson AJ** (1997) Prospective study of neurorehabilitation in multiple sclerosis. *J Neurol Neurosurg Psychiatry* **62**: 423-424
- Koster EH, Fox E, MacLeod C** (2009) Introduction to the special section on cognitive bias modification in emotional disorders. *J Abnorm Psychol* **118**: 1-4
- Kurtz MM, Seltzer JC, Shagan DS, Thime WR, Wexler BE** (2007) Computer-assisted cognitive remediation in schizophrenia: what is the active ingredient? *Schizophr Res* **89**: 251-260
- Kwakkel G** (2009) Towards integrative neurorehabilitation science. *Physiother Res Int* **14**: 137-146
- Lang TJ, Moulds ML, Holmes EA** (2009) Reducing depressive intrusions via a computerized cognitive bias modification of appraisals task: developing a cognitive vaccine. *Behav Res Ther* **47**: 139-145
- Li S, Tan J, Qian M, Liu X** (2008) Continual training of attentional bias in social anxiety. *Behav Res Ther* **46**: 905-912
- Liu C, Playford ED, Thompson AJ** (2003) Does neurorehabilitation have a role in relapsing-remitting multiple sclerosis? *J Neurol* **250**: 1214-1218
- Lothmann C, Holmes EA, Chan SW, Lau JY** (2011) Cognitive bias modification training in adolescents: effects on interpretation biases and mood. *J Child Psychol Psychiatry* **52**: 24-32
- Lubar JF** (1997) Neocortical dynamics: implications for understanding the role of neurofeedback and related techniques for the enhancement of attention. *Appl Psychophysiol Biofeedback* **22**: 111-126
- Lubar JF, Swartwood MO, Swartwood JN, O'Donnell PH** (1995) Evaluation of the effectiveness of EEG neurofeedback training for ADHD in a clinical setting as measured by changes in T.O.V.A. scores, behavioral ratings, and WISC-R performance. *Biofeedback Self Regul* **20**: 83-99
- Mackintosh B, Mathews A, Yiend J, Ridgeway V, Cook E** (2006) Induced biases in emotional interpretation influence stress vulnerability and endure despite changes in context. *Behav Ther* **37**: 209-222
- MacLeod C, Koster EH, Fox E** (2009) Whither cognitive bias modification research? Commentary on the special section articles. *J Abnorm Psychol* **118**: 89-99
- MacLeod C, Soong LY, Rutherford EM, Campbell LW** (2007) Internet-delivered assessment and manipulation of anxiety-linked attentional bias: validation of a free-access attentional probe software package. *Behav Res Methods* **39**: 533-538
- McHugh RK, Murray HW, Hearon BA, Calkins AW, Otto MW** (2010) Attentional bias and craving in smokers: the impact of a single attentional training session. *Nicotine Tob Res* **12**: 1261-1264
- Mernoff ST** (2008) Geriatric neurorehabilitation in the new millennium. *Med Health R I* **91**: 148-150
- Murphy R, Hirsch CR, Mathews A, Smith K, Clark DM** (2007) Facilitating a benign interpretation bias in a high socially anxious population. *Behav Res Ther* **45**: 1517-1529
- Murrey GJ, Starzinski D** (2004) An inpatient neurobehavioural rehabilitation programme for persons with traumatic brain injury: overview of and outcome data for the Minnesota Neurorehabilitation Hospital. *Brain Inj* **18**: 519-531

- Nadeau SE** (2002) A paradigm shift in neurorehabilitation. *Lancet Neurol* **1**: 126-130
- Owen AM, Hampshire A, Grahn JA, Stenton R, Dajani S, Burns AS, Howard RJ, Ballard CG** Putting brain training to the test. *Nature* **465**: 775-778
- Pachalska M, Moskala M, Macqueen BD, Polak J, Wilk-Franczuk M** (2010) Early neurorehabilitation in a patient with severe traumatic brain injury to the frontal lobes. *Med Sci Monit* **16**: CS157-168
- Papageorgiou C, Wells A** (1998) Effects of attention training on hypochondriasis: a brief case series. *Psychol Med* **28**: 193-200
- Papageorgiou C, Wells A** (2000) Treatment of Recurrent Major Depression With Attention Training. *Cognitive & Behavioral Practice* **7**: 407-413
- Parentê R, Herrmann DJ** (2003) Retraining cognition: Techniques and applications, Ed 2nd. Pro-Ed, Austin, Tex.
- Penner IK, Kappos L, Rausch M, Opwis K, Radu EW** (2006) Therapy-induced plasticity of cognitive functions in MS patients: insights from fMRI. *J Physiol Paris* **99**: 455-462
- Pilly PK, Grossberg S, Seitz AR** (2010) Low-level sensory plasticity during task-irrelevant perceptual learning: evidence from conventional and double training procedures. *Vision Res* **50**: 424-432
- Raymer AM, Beeson P, Holland A, Kendall D, Maher LM, Martin N, Murray L, Rose M, Thompson CK, Turkstra L, Altmann L, Boyle M, Conway T, Hula W, Kearns K, Rapp B, Simmons-Mackie N, Gonzalez Rothi LJ** (2008) Translational research in aphasia: from neuroscience to neurorehabilitation. *J Speech Lang Hear Res* **51**: S259-275
- Reese HE, McNally RJ, Najmi S, Amir N** (2010) Attention training for reducing spider fear in spider-fearful individuals. *J Anxiety Disord* **24**: 657-662
- Riddoch MJ, Humphreys GW** (1994) Cognitive neuropsychology and cognitive rehabilitation. L. Erlbaum, Hove (UK) ; Hillsdale NJ (USA)
- Rode G, Klos T, Courtois-Jacquin S, Rossetti Y, Pisella L** (2006) Neglect and prism adaptation: a new therapeutic tool for spatial cognition disorders. *Restor Neurol Neurosci* **24**: 347-356
- Ruff RL, McKerracher L, Selzer ME** (2008) Repair and neurorehabilitation strategies for spinal cord injury. *Ann N Y Acad Sci* **1142**: 1-20
- Salemink E, van den Hout M** (2010) Trained interpretive bias survives mood change. *J Behav Ther Exp Psychiatry* **41**: 310-315
- Saxby E, Peniston EG** (1995) Alpha-theta brainwave neurofeedback training: an effective treatment for male and female alcoholics with depressive symptoms. *J Clin Psychol* **51**: 685-693
- Schartau PE, Dalgleish T, Dunn BD** (2009) Seeing the bigger picture: training in perspective broadening reduces self-reported affect and psychophysiological response to distressing films and autobiographical memories. *J Abnorm Psychol* **118**: 15-27
- Schmidt NB, Richey JA, Buckner JD, Timpano KR** (2009) Attention training for generalized social anxiety disorder. *J Abnorm Psychol* **118**: 5-14
- See J, MacLeod C, Bridle R** (2009) The reduction of anxiety vulnerability through the modification of attentional bias: a real-world study using a home-based cognitive bias modification procedure. *J Abnorm Psychol* **118**: 65-75
- Sherer M, Yablon SA, Nakase-Richardson R** (2009) Patterns of recovery of posttraumatic confusional state in neurorehabilitation admissions after traumatic brain injury. *Arch Phys Med Rehabil* **90**: 1749-1754
- Siegle GJ, Ghinassi F, Thase ME** (2007) Neurobehavioral therapies in the 21st century: Summary of an emerging field and an extended example of Cognitive Control Training for depression. *Cognitive Therapy & Research* **31**: 235-262
- Sinkaer T, Popovic DB** (2009) Neurorehabilitation technologies - present and future possibilities. Introduction. *NeuroRehabilitation* **25**: 1-3
- Standage H, Ashwin C, Fox E** (2009) Comparing visual and auditory presentation for the modification of interpretation bias. *J Behav Ther Exp Psychiatry* **40**: 558-570

- Standage H, Ashwin C, Fox E** (2010) Is manipulation of mood a critical component of cognitive bias modification procedures? *Behav Res Ther* **48**: 4-10
- Steel C, Wykes T, Ruddle A, Smith G, Shah DM, Holmes EA** (2010) Can we harness computerised cognitive bias modification to treat anxiety in schizophrenia? A first step highlighting the role of mental imagery. *Psychiatry Res* **178**: 451-455
- Steinman SA, Teachman BA** (2010) Modifying interpretations among individuals high in anxiety sensitivity. *J Anxiety Disord* **24**: 71-78
- Taub E, Uswatte G, Elbert T** (2002) New treatments in neurorehabilitation founded on basic research. *Nat Rev Neurosci* **3**: 228-236
- Thompson AJ** (2005) Neurorehabilitation in multiple sclerosis: foundations, facts and fiction. *Curr Opin Neurol* **18**: 267-271
- Trojano L, Moretta P, Estraneo A, Santoro L** (2010) Neuropsychologic assessment and cognitive rehabilitation in a patient with locked-in syndrome and left neglect. *Arch Phys Med Rehabil* **91**: 498-502
- Trudeau DL** (2005) Applicability of brain wave biofeedback to substance use disorder in adolescents. *Child Adolesc Psychiatr Clin N Am* **14**: 125-136, vii
- Twamley EW, Jeste DV, Bellack AS** (2003) A review of cognitive training in schizophrenia. *Schizophr Bull* **29**: 359-382
- Van Bockstaele B, Verschuere B, De Houwer J, Crombez G** (2010) On the costs and benefits of directing attention towards or away from threat-related stimuli: a classical conditioning experiment. *Behav Res Ther* **48**: 692-697
- van den Broek MD** (2005) Why does neurorehabilitation fail? *J Head Trauma Rehabil* **20**: 464-473
- Vitali P, Tettamanti M, Abutalebi J, Ansaldo AI, Perani D, Cappa SF, Joanette Y** (2010) Generalization of the effects of phonological training for anomia using structural equation modelling: a multiple single-case study. *Neurocase* **16**: 93-105
- Wang M, Reid D** (2010) Virtual Reality in Pediatric Neurorehabilitation: Attention Deficit Hyperactivity Disorder, Autism and Cerebral Palsy. *Neuroepidemiology* **36**: 2-18
- Watkins ER, Baeyens CB, Read R** (2009) Concreteness training reduces dysphoria: proof-of-principle for repeated cognitive bias modification in depression. *J Abnorm Psychol* **118**: 55-64
- Whyte J, Gordon W, Rothi LJ** (2009) A phased developmental approach to neurorehabilitation research: the science of knowledge building. *Arch Phys Med Rehabil* **90**: S3-10
- Williams WH, Evans JJ, Wilson BA** (2003) Neurorehabilitation for two cases of post-traumatic stress disorder following traumatic brain injury. *Cogn Neuropsychiatry* **8**: 1-18
- Wilson EJ, MacLeod C, Mathews A, Rutherford EM** (2006) The causal role of interpretive bias in anxiety reactivity. *J Abnorm Psychol* **115**: 103-111
- Wolinsky FD, Vander Weg MW, Martin R, Unverzagt FW, Ball KK, Jones RN, Tennstedt SL** (2009) The effect of speed-of-processing training on depressive symptoms in ACTIVE. *J Gerontol A Biol Sci Med Sci* **64**: 468-472
- Xu J, Yu L, Cai R, Zhang J, Sun X** (2010) Early continuous white noise exposure alters auditory spatial sensitivity and expression of GAD65 and GABAA receptor subunits in rat auditory cortex. *Cereb Cortex* **20**: 804-812
- Yoo SS, Jolesz FA** (2002) Functional MRI for neurofeedback: feasibility study on a hand motor task. *Neuroreport* **13**: 1377-1381
- Zelazo PD, Cunningham WA** (in press) Executive Function: Mechanisms Underlying Emotion Regulation. *In* JJ Gross, ed, *Handbook of emotion regulation*. Guilford, New York