CURRICULUM VITAE
Dennis J. McFarland
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EDUCATION

1971 B.S.   Psychology (Minor - Biology), University of Kentucky
1974 M.S. Psychology, University of Kentucky
1978 Ph.D. Psychology (Minor- Pharmacology), University of Kentucky

PROFESSIONAL EXPERIENCE

9/70 - 6/72   Teaching Assistant, University of Kentucky
6/72 - 9/77   Research Assistant, University of Kentucky
9/77 - 6/80   Research Scientist I, Wadsworth Center, New York State
                     Department of Health
6/80 - 9/95   Project Assistant, Wadsworth Center, New York State
                     Department of Health
9/95 - 10/98   Research Scientist II, Wadsworth Center, New York State
                     Department of Health
10/98 - 11/03   Research Scientist III, Wadsworth Center, New York State
                     Department of Health
5/03 - present   Research Scientist IV, Wadsworth Center, New York State
                     Department of Health

AWARDS

1998 Editor's Award in Hearing, American Speech-Language-Hearing
        Association.
1999 Pangborn Award, Wadsworth Center, New York State Department of   Health
2008 Transactions in Biomedical Engineering Outstanding Paper Award, IEEE
        Engineering   in   Medicine   and   Biology   Society

MEMBERSHIPS

Society for Neuroscience
American Psychological Society

REVIEWER

American Journal of Audiology
Behavioral and Brain Sciences
Behavioral Processes
Behavioral Brain Research
Brain and Cognition
Cerebral Cortex
Clinical Neurophysiology
Ear and Hearing
IEEE Reviews in Biomedical Engineering
IEEE Signal Processing Magazine
IEEE Transactions on Biomedical Engineering
IEEE Transactions on Neural Networks
IEEE Transactions on Neural Systems and Rehabilitation Engineering
IEEE Transactions on Systems, Man, and Cybernetics
IET Signal Processing
International Journal of Psychophysiology
Journal of Computational Neuroscience
Journal of Neural Engineering
Journal of NeuroEngineering and Rehabilitation
Journal of Neurology, Neurosurgery & Psychiatry

Journal of Neurophysiology

Journal of Neuroscience

Journal of Neuroscience Methods

Journal of Speech Language and Hearing Research

Journal of the Royal Society Interface

Laboratory Investigations

Language, Speech and Hearing Services in the Schools

Measurement

Medical and Biological Engineering and Computing

Medical Engineering and Physics

Movement Disorders

Neuroimage: Clinical

Neurorehabilitation and Neural Repair

Neuroscience Letters

Perceptual and Motor Skills

Physiology and Behavior

Progress in Brain Research

Psychophysiology

ASSOCIATE EDITOR

IEEE Transactions on Neural Systems and Rehabilitation Engineering

Journal of Speech Language and Hearing Research

STUDY SECTIONS

Reparative Medicine, July 2002 - Member

NIDCD Translational Research, Feb. & Nov. 2006 – Chairperson

Veterans Administration Rehabilitation Research- Spring 2008

Veterans Administration Rehabilitation Research- March 2011

NIDCD Voice Speech and Language Small Grants- March 2011

INVITED LECTURES

"Animal Models in Behavioral Neurovirology" The second International Conference on Comparative Virology, Nov. 1984.

"Animal Models in Behavioral Neurovirology" National Institute for Mental Health, Jan. 1985.

"Development of a Brain-Computer Interface", Society for Applied Psychophysiology and Biofeedback, March, 1995.

"Workshop on diagnosing central auditory processing disorders" Annual Convention of the American Speech, Language and Hearing Association, Boston, November, 1997.

"Development of ERD/ERS based communication and Control", 9th World Congress of Psychophysiology, Sicily, Italy, September, 1998.

"Re-conceptualizing Central Auditory Processing Disorders" American Academy of Audiology, Miami, 1999.

"An EEG-Based Brain-Computer Interface" American Clinical Neurophysiology Society, Montreal, Sept. 2000.

"An EEG-based Brain-Computer Interface" American Speech-Language-Hearing Association, Washington, DC, 2000.

"The reliability and validity of the CAPD Diagnosis" 9th Appalachian Spring Conference, Mountain Home, Tn, June 2002

"Control of two-dimensional cursor movement by a non-invasive brain-computer interface in humans" NIPS 2004 Workshop on Brain-Computer Interfacing, Wistler, Canada, December 2004

"Role of Modality Specificity in Diagnosing Disorders of Auditory Perception" American Speech-Language-Hearing Association, San Diego, CA 2005

"A non-invasive brain-computer interface for communication and control", Mechanism of Brain and Mind 6th Winter Workshop, Hokkaido, Japan, 2006.

"Brain-computer interfaces for communication and control", Annual convention of the Society for Artificial Intelligence and Simulation of Behavior, Aberdeen, Scotland, April 2008.

"Design issues in BCI research", Department of Biomedical Engineering, University of Michigan, Ann Arbor, November 2008.

"Non-invasive EEG-based BCIs for people with little or no motor function." University of Groningen, The Netherlands, June 2009.

"Is Modality Specificity Neuroanatomically and Neurophysiologically Tenable?", Annual Convention of the American Speech-Language-Hearing Association, New Orleans, LA, November 2009.

"Voluntary control of EEG Sensorimotor rhythms" Beyond Brain-Machine Interface Workshop, Longbeach, CA, June 2010.

"BCIs: Traditional assumptions meet emerging realities", Annual meeting of the Association for the Advancement of Science, Washington, DC, February 2011.

"Future challenges of BCI", The 23rd Meeting of the European Neurological Society , Barcelona, Spain, June 2013.

GRANT SUPPORT

IBM Corporation, "Cursor control through an EEG-based brain-computer interface" Co-Investigator, (P.I. Jon Wolpaw), $34,681/year, 1988-1990.

New York State Science and Technology Foundation, "EEG based brain-computer interface for communication and control" Co-Investigator, (P.I.,J. R. Wolpaw), $15,000/year, 1991-1992.

NIH, " EEG-Based Brain-Computer Interface" Co-Investigator, (P.I. , J. R. Wolpaw), $146,192/year, 1992-1998.

NIH, "EEG-Based Brain-Computer Interface" Co-Investigator, (P.I. , J. R. Wolpaw), $355,004/year, 1998-2003.

ALS Hope Foundation, "Brain-computer interface for Amyotropic Lateral Sclerosis". Principal Investigator, $47,605/year, 2001-2003.

NIH, Bioengineering Research Program, "General Purpose Brain-Computer Interface" Co-Investigator, (P.I., J. R. Wolpaw), $677,126/year, 2002-2007

TEACHING

University of Kentucky 1970-1972. Teaching assistant for Introductory Psychology, Laboratory for Experimental Psychology and help sessions for graduate statistics. Lecturer for Introductory Psychology, the Psychology of Individual Differences and a non-credit course on the use of computers in Psychology.

Wadsworth Center 1988 - present. Mentor for 16 graduate students, Lectures for Introduction to Biomedical Science, Brain Computer Interfaces.

PATENT

Wolpaw, J. R. & McFarland, D. J., "Communication method and system using brain waves for multidimensional control." United States Patent Number 5,638,826, June 17, 1997.

BIBLIOGRAPHY

RESEARCH PAPERS

McFarland, D. J., Jacobus, K. & Hines, K. (1974) Transfer of instruction in introductory psychology. *Psychological Reports, 74*, 147-150.

Winett, R. A., Moffatt, S. A., Fuchs, W. L. & McFarland, D. J. (1975) A preschool screener for child care and related evaluative research. *Developmental Psychology, 11*, 110.

Miller, L. L., Cornett, T., Brightwell, D., McFarland, D. J., Drew, W. & Wikler, A. (1976) Marijuana and memory impairment: the effect of retrieval cues on free recall. *Pharmacology, Biochemistry and Behavior, 5*, 639-643.

Kostas, J., McFarland, D. J. & Drew, W. G. (1976) Lead induced hyperactivity: Chronic exposure during the neonatal period in the rat. *Pharmacology, 14*, 435-442.

Miller, L. L., Cornett, T., Drew, W. G., McFarland, D. J., Brightwell, D. & Wikler, A. (1977) Marijuana: Dose response effects on pulse rate, subjective estimates of potency, pleasantness and recognition memory. *Pharmacology, 15*, 268-275.

Miller, L. L., Cornett, T., Drew, W. G., McFarland, D. J., Brightwell, D. & Wikler, A. (1977) Marijuana: Effects on storage and retrieval of prose material. *Psychopharmacology, 51*, 311-316.

Miller, L. L., McFarland, D. J., Cornett, T., Brightwell, D. & Wikler, A. (1977) Marijuana: Effects on free recall and subjective organization of pictures and words. *Psychopharmacology, 55*, 257-262.

Miller, L. L., McFarland, D. J., Cornett, T. & Brightwell, D. (1977) Marijuana and memory impairment: Effect on free recall and recognition memory. *Pharmacology, Biochemistry and Behavior, 1,* 99-103.

Kostas, J. McFarland, D. J. & Drew, W. G. (1978) Lead-induced behavioral disorders in the rat: Effects of amphetamine. *Pharmacology, 16*, 226-236.

McFarland, D. J., Kostas, J. & Drew, W. G. (1978) Dorsal hippocampal lesions: Effects of pre-conditioning CS exposure on flavor aversion. *Behavioral Biology, 22*, 398-404.

Miller, L. L., Cornett, T. & McFarland, D. J. (1978) Marijuana: An analysis of storage and retrieval deficits in memory with the technique of restricted reminding. *Pharmacology, Biochemistry and Behavior, 8*, 327-332.

Drew, W. G., Kostas, J., McFarland, D. J., & DeRossett, S. E. (1979) Effects of neonatal lead exposure in the rat on apomorphine-induced aggression and stereotypy. *Pharmacology, 8*, 257-262.

Rinsky, J., Wikler, A., Way, J. & McFarland, D. J. (1979) "Mental set" in controls, postalcoholics, chronic schizophrenics and organics. *Biological Psychiatry, 14*, 181-191.

Drew, W. G., Kostas, J., McFarland, D. J. & DeRossett, S. A. (1980) Continuous spontaneous alternation in the rat: Influence of Y-maze arm times. *Perceptual and Motor Skills, 51*, 359-369.

McFarland, D. J. & Hotchin, J. (1980) Early behavioral abnormalities in mice due to scrapie virus encephalopathy. *Biological Psychiatry, 15*, 37-44.

McFarland, D. J., Baker, F. & Hotchin, J. (1980) Host and viral genetic determinants of the behavioral effects of scrapie. *Physiology and Behavior, 24*, 911-914.

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McFarland, D. J. (1985) Mouse phenotype modulates the behavioral effects of acute thiamine deficiency. *Physiology and Behavior, 35*, 597-601.

McFarland, D. J., Sikora, E. & Hotchin, J. (1986) The production of focal herpes encephalitis in mice by stereotaxic inoculation of virus: Anatomical and behavioral effects. *Journal of the Neurological Sciences, 72*, 307-318.

McFarland, D. J. & Hotchin, J. (1987) Contrasting patterns of virus spread and neuropathology following microinjection of herpes simplex into the hippocampus or cerebellum of mice. *Journal of the Neurological Sciences, 79*, 255-265.

Lee, C. L., McFarland, D. J. & Wolpaw, J. R. (1988) Retrograde transport of the lectin Phaseolus vulgaris leucoagglutinin (PHA-L) by rat spinal motorneurons. *Neuroscience Letters, 86*, 133-138.

Seegal, R. F. & McFarland, D. J. (1988) Stereotaxic microinjection of HSV-1 selectively decreases striatal dopamine concentrations in mice. *Brain Research, 445*, 234-240.

McFarland, D. J. (1989) Effects of amphetamine, scopolamine and apomorphine on spontaneous alternation and position biases of mice in a Y-maze. *Pharmacology, Biochemistry and Behavior, 32*, 723-726.

McFarland, D. J. (1989) Temporal development of the behavioral effects of herpes encephalitis in mice. *Psychobiology, 17*, 276-280.

Waniewski, R. & McFarland, D. J. (1990) Intrahippocampal kainic acid reduces glutamine synthetase. *Neuroscience, 34*, 305-310.

Wolpaw, J. R., McFarland, D. J., Neat, G. W., & Forneris, C. A. (1991) An EEG-based brain-computer interface for cursor control. *Electroencephalography and Clinical Neurophysiology, 78*, 252-259.

Anderson, E. J., McFarland, D. & Kimelberg, H. K. (1992) Serotonin uptake by astrocytes in situ. *Glia, 6*, 154-158.

Cacace, A. T., McFarland, D. J., Emrich, J. F. & Haller, J. S. (1992) Assessing short-term recognition memory with forced-choice psychophysical methods. *Journal of Neuroscience Methods, 44*, 145-155.

Cacace, A. T. & McFarland, D. J. (1992) Acoustic pattern recognition and short-term memory in normal adults and young children. *Audiology, 31*, 334-341.

McFarland, D. J. & Cacace, A. T. (1992) Aspects of short-term acoustic recognition memory: Modality and serial position effects. *Audiology, 31*, 342-352.

McFarland, D. J., Neat, G. W., Read, R. F. & Wolpaw, J. R. (1993) An EEG-based method for graded cursor control. *Psychobiology, 21*, 77-81.

Wolpaw, J. R. & McFarland, D. J. (1994) Multichannel EEG-based brain-computer communication. *Electroencephalography and Clinical Neurophysiology, 90*, 444-449.

Cacace, A. T., Lovely, T. J., Winter, D. F., Parnes, S. M. & McFarland, D. J. (1994) Auditory perceptual and visual-spatial characteristics of gaze-evoked tinnitus. *Audiology, 33*, 291-303.

Cacace, A.T., Lovely, T. J., McFarland, D. J., Parnes, S. M., & Winter, D. F. (1994) Anomalous cross-modal plasticity following posterior fossa surgery: Some speculations on gaze-evoked tinnitus. *Hearing Research, 81*, 22-32.

McFarland, D. J. & Cacace, A. T. (1995) Comparisons of memory for nonverbal auditory and visual sequential stimuli. *Psychological Research, 57*, 80-87.

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Pfurtscheller, G., Flotzinger, D., Pregenzer, W., Wolpaw, J. R. & McFarland, D. J. (1996) EEG-based brain computer interface (BCI): search for optimal electrode positions and frequency components. *Medical Progress Through Technology, 21*, 111-121.

Cacace, A. T., McClelland, W. A., Weiner, J. & McFarland, D. (1996) Individual differences and the reliability of 2F1-F2 distortion-product otoacoustic emissions: effects of time-of-day, stimulus variables, and gender. *Journal of Speech and Hearing Research, 39*, 1138-1148.

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Cacace, A. T., Cousins, J. P., Parnes, S. M., Semenoff, D., Holmes, T., McFarland, D. J., Davenport, C., Stegbauer, K. & Lovely, T. J. (1999) Cutaneous-evoked tinnitus: I. Phenomenology, psychophysics and functional imaging. *Audiology and Neuro-otology, 4*, 247-257.

Cacace, A. T., Cousins, J. P., Parnes, S. M., Semenoff, D., Holmes, T., McFarland, D. J., Davenport, C., Stegbauer, K. & Lovely, T. J. (1999) Cutaneous-evoked tinnitus: II. Review of neuroanatomical, physiological and functional imaging studies. *Audiology and Neuro-otology , 4*, 258-268.

Cacace, A. T., McFaland, D. J., Ouimet, J. R., Schrieber, E. J. & Marro, P. (2000) Temporal processing deficits in remediation-resistant reading-impaired children. *Audiology and Neuro-otology, 5*, 83-97.

McFarland, D. J., Miner, L. A., Vaughan, T. M. & Wolpaw, J. R. (2000) Mu and beta rhythm topographies during motor imagery and actual movement. *Brain Topography, 3*, 177-186.

Wolpaw, J.R., Birbaumer, N., Heetdrecks, W. J., McFaland, D. J., Peckham, P. H., Schalk, G., Donchin, E., Quatrano, L. A., Robinson, C. J., & Vaughan, T. M. (2000) Brain-computer interface technology: a review of the first international meeting. *IEEE Transactions on Rehabilitation Engineering, 8*, 164-173.

Wolpaw, J. R., McFarland, D. J., & Vaughan, T. M. (2000) Brain-computer interface research at the Wadsworth Center. *IEEE Transactions on Rehabilitation Engineering, 8*, 222-226.

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Wolpaw, J. R., Birbaumer, N., McFarland, FD. J., Pfurtscheller, G. & Vaughan, T. M. (2002) Brain-computer interfaces for communication and control. *Clinical Neurophysiology, 113*, 767-791.

Cacace, A. T. & McFarland, D. J. (2003) Spectral dynamics of electroencephalographic activity during auditory information processing. *Hearing Research, 176*, 25-41.

Cacace, A. T. & McFarland, D. J. (2003) Quantifying signal-to-noise ratio of mismatch negativity in humans. *Neuroscience Letters, 341*, 251-255.

McFarland, D. J., Sarnacki, W. A., & Wolpaw, J. R. (2003) Brain-computer interface (BCI) operation: optimizing information transfer rates. *Biological Psychology, 63*, 237-251.

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Wolpaw, J. R., McFarland, D. J., Vaughan, T. M., and Schalk, G. (2003) The Wadsworth center brain-computer interface (BCI) research and development program. *IEEE Transactions on Neural Systems and Rehabilitation Engineering, 11*, 204-207.

Goncharova, I. I., McFarland, D. J., Vaughan, T. M., & Wolpaw, J. R. (2003) EMG Contamination of EEG: Spectral and Topographical Characteristics. *Clinical Neurophysiology, 114*, 1580-1593.

McFarland, D. J. & Wolpaw, J. R. (2003) EEG-based communication and control: Speed-accuracy relationships. *Applied Psychophysiology and Biofeedback, 28*, 217-231.

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McFarland, D. J. and Cacace, A. T. (2004) Separating stimulus-locked and unlocked components of the auditory event related potential. *Hearing Research, 193*, 111-120.

Fabiani, G.E., McFarland, D.J., Wolpaw, J.R., and Pfurtscheller, G. (2004) Conversion of EEG activity into Cursor Movement by a Brain Computer Interface (BCI). *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 12, 331-338.

Wolpaw, J.R and McFarland, D.J. (2004) Control of a two-dimensional movement signal by a non-invasive brain-computer interface in humans. *Proceedings of the National Academy of Sciences*, 101, 17849-17854.

Kübler, A., Nijboer, F., Mellinger, J., Vaughan, T.M., Pawelzik, H., Schalk, G. McFarland, D.J., Birbaumer, N., and Wolpaw, J.R. (2005) Patients with ALS can use

sensorimotor rhythms to operate a brain-computer interface. *Neurology*, 64, 1775-1777.

McFarland, D.J., Sarnacki, W.W., Vaughan, T.M., & Wolpaw, J.R. (2005) Brain-computer interface (BCI) operation: Signal and noise during early training sessions. *Clinical Neurophysiology*, 116, 56-62.

McFarland, D.J., and Wolpaw, J.R. (2005) Sensorimotor rhythm-based brain-computer interface (BCI): Feature selection by regression improves performance. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *13*, 372-379.

Cacace, A.T., and McFarland, D.J. (2005) The importance of modality specificity in diagnosing central auditory processing disorder. *American Journal of Audiology*, *14*, 112-123.

Cacace, A.T., and McFarland, D.J. (2005) Response to Katz and Tillery (2005), Musiek, Chermak, and Bellis (2005), and Rosen (2005). *American Journal of Audiology*, *14*, 143-150.

McFarland, D.J., Anderson, C.W., Muller, K.R., Schlogl, A., and Krusienski, D.J. (2006) BCI meeting 2005- Workshop on BCI signal processing: Feature extraction and translation. *IEEE Transactions on Neural Systems and Rehabilitation Engineering, 14,* 135-138.

Vaughan, TM, McFarland, DJ, Schalk, G, Sarnacki, WA, Krusienski, DJ, Sellers, EW, and Wolpaw, JR (2006) The Wadsworth BCI research and development program: At home with BCI. *IEEE Transactions on Neural Systems and Rehabilitation Engineering, 14,* 229-233.

Krusienski, D.J., Sellers, E.W., Cabestaing, F., Bayoudh, S., McFarland, D.J., Vaughan, T.M., and Wolpaw, J.R. (2006) A comparison of classification techniques for the P300 Speller. Journal of Neural Engineering, 3, 299–305

Sellers, E.W., Krusienski, D.J., McFarland, D.J., Vaughan, T.M., and Wolpaw, J.R. (2006) A P300 event-related potential brain-computer interface (BCI): matrix size and interstimulus interval affect performance. Biological Psychology. 73, 242-252.

Krusienski, D.J., Schalk, G., McFarland, D.J., and Wolpaw, J.R. (2007) A u-rhythm matched filter for continuous control of a brain-computer interface. IEEE Transactions on Biomedical Engineering, 54, 273-280.

Nijboer, F., Furdea, A., Gunst, I., Mellinger, J., McFarland, D.J., Birbaumer, N., and Kubler, A. (2008) An auditory Brain-computer interface (BCI). *Journal of Neuroscience Methods*, 167, 43-50.

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McFarland, D.J., Krusienski, D.J., Sarnacki, W.A., and Wolpaw, J.R. Emulation of computer mouse control with a noninvasive brain-computer interface. (2008) *Journal of Neural Engineering,* 5, 101-110.

McFarland, D.J. and Wolpaw, J.R. (2008) Sensorimotor rhythm-based brain-copmputer interface (BCI): model order selection for autoregressive spectral analysis. *Journal of Neural Engineering, 5,* 155-162.

Romero, S.G., McFarland, D.J., Faust, R., Farrell, L., and Cacace, A.T. (2008) Electrophysiological markers of skill-related neuroplasticity. *Biological Psychology, 78,* 221-230.

McFarland, D.J. and Wolpaw, J.R. (2008) Brain-computer interface operation of robotic and prosthetic devices. *IEEE Computer*, *41*, 52-56.

Fredrich, E.V., McFarland, D.J., Neuper, C., Vaughan, T.M., Brunner, P., and Wolpaw, J.R. (2009) A scanning protocol for sensorimotor rhythm-based brain-computer interface. *Biological Psychology*, 80, 169-175.

Fruitet, J., McFarland, D.J., and Wolpaw, J.R. (2010) A comparison of regression techniques for a two-dimensional sensorimotor rhythm-based barin-computer interface. *Journal of Neural Engineering*, 7, 1-9.

McFarland, D.J., Sarnacki, W.A., and Wolpaw, J.R. (2010) Electroencephalographic (EEG) control of three-dimensional movement. *Journal of Neural Engineering*, 7, 036007.

McFarland, D.J., Sarnacki, W.A., Townsend, G., Vaughan, T., and Wolpaw, J.R. (2011) The P300-based brain-computer interface (BCI): Effects of stimulus rate. *Clinical Neurophysiology,* 122, 731-737.

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Lawfield, A., McFarland, D.J. And Cacace, A.T. (2011) Dichotic and dichoptic digit perception in normal adults. *Journal of the American Academy of Audiology, 22, 332-341.*

Pomeroy, V., Aglioti, S.M., Mark, V.W., McFarland, D., Stinear, C., Wolf, S.L., Corbetta, M. and Fizpatrick, S.M. (2011) Neurological principles and rehabilitation of action disorders: rehabilitation interventions. *Neurorehabilitation and Neural Repair, 25(5 Suppl)* 33S-43S.

Boulay, C.B., Sarnacki, W.A., Wolpaw, J.R. and McFarland, D.J. (2011) Trained modulation of sensorimotor rhythms can affect reaction time. *Clinical Neurophysiology, 122,* 1820-1826.

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