

# MARTHA E. PAYNE, PhD, RD, MPH

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## Education

### **The University of North Carolina at Chapel Hill School of Public Health**

*PhD in Nutrition*; 5/2006.

Dissertation: Nutritional Factors of Vascular Depression

Advisor: Pamela S. Haines, DrPH, RD, MS

*MPH in Nutrition*; 8/1996.

### **Oberlin College**

*BA in Biopsychology*; 12/1988.

## Certification

### **American Dietetic Association**

Registered Dietitian (8/1996 – present)

## Professional Experience

### **Duke University Medical Center** (9/1990 - present)

Department of Psychiatry and Behavioral Sciences

**Assistant Professor** 10/2006 - present

Nutrition and neuroimaging research in geriatric psychiatry

**Co-Director**, Neuropsychiatric Imaging Research Laboratory (NIRL) 3/2007 - present

Investigate diet and depression

Direct NIRL

Design studies

Develop methods

Hire staff

Prepare manuscripts/grants

Analyze MRI scans

Develop budgets

Evaluate nutrition and brain relationships

Supervise/train staff and students

Plan/conduct data analyses

Establish reliability procedures

Supervise/coordinate subject assessment

Oversee quality assurance, backups

Create protocols for image analysis/documentation

Mentor students and visiting scholars

### **Current Grants**

- Antioxidants and MRI-Defined Vascular Depression
- Neurobiology of Cognitive Outcomes of Depression in the Elderly
- Genes and Alterations in Brain Structure and Function in Depression
- Conte Center for Neuroscience of Late Life Depression
- Bipolar Disorder in Late Life
- Diffusion Tensor Imaging in Depression
- Post Traumatic Stress Disorder in Children
- Biomedical Informatics Research Network
- Vascular Depression

### **Prior Grants**

- Dietary Folate, Folate-Metabolizing Genes, and Late-life Depression
- Neuroimaging in HIV Infection
- Neurofibromatosis-1 in Children
- Apolipoprotein E Allele and Cognitive Decline

Promoted from **Associate in Research** 10/1998 – 9/2006  
**Project Coordinator** (8/1994 – 9/1998)  
**Manager**, Neuropsychiatric Imaging Research Laboratory 8/1994 – 2/2007

Clinical Trials Coordinator for 8 psychiatric drug studies 9/1990 – 8/1994  
**Project Coordinator** 3/1993 - 8/1994  
**Senior Data Technician** 1/1992 - 3/1993  
**Data Technician** 9/1990 - 1/1992

Recruited/assessed subjects                      Maintained study documentation  
Prepared budgets                                      Obtained IRB approvals

Research Internships

**Nutrition Research Internship** (5/1996 – 7/1996)  
Women's Health Initiative (The University of North Carolina at Chapel Hill)

**Dana Foundation Internship in Neural Histochemistry** (5/1988 – 7/1988)  
Oberlin College Program in Neuroscience and Biopsychology (Oberlin, OH)

**Dana Foundation Internship in Invertebrate Nutritional Biology** (9/1986 – 5/1987)  
Oberlin College Department of Biology (Oberlin, OH)

Clinical Internships

**Public Health Nutrition Field Experience** (8/1995 – 5/1996)  
Wake County Department of Health (Raleigh, NC)

**Clinical Dietetics Field Experience** (5/1995 – 8/1995)  
Dorothea Dix Hospital (Raleigh, NC)  
General Clinical Research Center (The University of North Carolina at Chapel Hill)

Awards and Honors

**NIH Office of Dietary Supplements Trainee Travel Award** to attend  
Dietary Supplement Use in the Elderly Conference, Bethesda, MD, 1/2003

**NIH National Research Service Award** for pre-doctoral training  
The University of North Carolina at Chapel Hill, Department of Nutrition  
9/1996 – 9/1997

**Delta Omega** Public Health Honor Society, inducted 4/1996

**Sigma Xi** Honor Society for Scientific Research, inducted 5/1989

Professional Service

**Editorial Board**, *The Journal of Nutrition for the Elderly* (2/2008 – present)  
**Review Board**, *Public Health Nursing* (6/2004 – present)  
**Reviewer**, *European Journal of Clinical Nutrition* (2007)  
**Reviewer**, *International Psychogeriatrics* (2006 – present)  
**Reviewer**, *Psychiatry Research: Neuroimaging* (2003)

**North Pavilion Building Committee** (8/2000 – 11/2004; Chairperson 1/2002 – 6/2002)  
**North Pavilion Food Service Advisory Committee** (2004)

Memberships

**American Society for Nutrition (ASN)**  
**American Dietetic Association (ADA)**  
**American Association for Geriatric Psychiatry (AAGP)**  
**Delta Omega** Public Health Honor Society  
**Gerontological Society of America (GSA)**  
**Sigma Xi** Honor Society for Scientific Research

Publications (in chronological order)**Refereed Journals**

- Pan C, McQuoid DR, Taylor WD, **Payne ME**, Ashley-Koch A, Steffens DC (in press): Association analysis of the COMT/ MTHFR genes and geriatric depression: An MRI study of the putamen. *Int J Geriatr Psychiatry*
- Qiu A, Taylor WD, Zhao Z, MacFall JR, Miller MI, Key CR, **Payne ME**, Steffens DC, Krishnan KR (2009): APOE related hippocampal shape alteration in geriatric depression. *Neuroimage* 44(3):620-6.
- Doty TJ, **Payne ME**, Steffens DC, Beyer JL, Krishnan KR, Labar KS (2008): Age-dependent reduction of amygdala volume in bipolar disorder. *Psychiatry Res* 163(1):84-94.
- De Bellis MD, Van Voorhees E, Hooper SR, Gibler N, Nelson L, Hege SG, **Payne ME**, MacFall J (2008): Diffusion tensor measures of the corpus callosum in adolescents with adolescent onset alcohol use disorders. *Alcohol Clin Exp Res* 32(3):395-404.
- Greenberg DL, Messer DF, **Payne ME**, MacFall JR, Provenzale JM, Steffens DC, Krishnan KRR (2008): Aging, gender, and the elderly adult brain: An examination of analytical strategies. *Neurobiol Aging* 29(2):290-302.
- Greenberg DL, **Payne ME**, MacFall JR, Steffens DC, Krishnan RR (2008): Hippocampal volumes and depression subtypes. *Psychiatry Res* 163(2):126-32.
- Jones LD, **Payne ME**, Messer DF, Beyer JL, MacFall JR, Krishnan KR, Taylor WD (2008): Temporal lobe volume in bipolar disorder: Relationship with diagnosis and antipsychotic medication use. *J Affect Disord*
- Payne ME**, Anderson JJB, Steffens DC (2008): Calcium and vitamin D intakes may be positively associated with brain lesions in depressed and non-depressed elders. *Nutr Res* 28:285-292.
- Taylor WD, Kuchibhatla M, **Payne ME**, Macfall JR, Sheline YI, Krishnan KR, Doraiswamy PM (2008): Frontal white matter anisotropy and antidepressant remission in late-life depression. *PLoS ONE* 3(9):e3267.
- Taylor WD, Zuchner S, McQuoid DR, **Payne ME**, MacFall JR, Steffens DC, Speer MC, Krishnan KR (2008): The brain-derived neurotrophic factor VAL66MET polymorphism and cerebral white matter hyperintensities in late-life depression. *Am J Geriatr Psychiatry* 16(4):263-271.
- Trone RJ, Weaver KG, Steffens DC, **Payne ME** (2008): Glycemic index and glycemic load are not associated with brain lesions in the elderly. *J Nutr Health Aging*
- Payne ME**, Haines PS, Chambless LE, Anderson JJB, Steffens DC (2007): Food group intake and brain lesions in late-life vascular depression. *International Psychogeriatrics* 19:295-305.
- Potter GG, Blackwell AD, McQuoid DR, **Payne ME**, Steffens DC, Sahakian BJ, Welsh-Bohmer KA, Krishnan KRR (2007): Prefrontal white matter lesions and prefrontal task impersistence in depressed and nondepressed elders. *Neuropsychopharmacology* 32(10):2135-42.
- Steffens DC, Potter GG, McQuoid DR, MacFall JR, **Payne ME**, Burke JR, Plassman BL, Welsh-Bohmer KA (2007): Longitudinal magnetic resonance imaging vascular changes, apolipoprotein E genotype, and development of dementia in the neurocognitive outcomes of depression in the elderly study. *Am J Geriatr Psychiatry* 15(10):839-849.
- Taylor WD, Bae JN, MacFall JR, **Payne ME**, Provenzale JM, Steffens DC, Krishnan KR (2007): Widespread effects of hyperintense lesions on cerebral white matter structure. *Am J Roentgenol* 188:1695-1704.
- Taylor WD, MacFall JR, **Payne ME**, McQuoid DR, Steffens DC, Provenzale JM, Krishnan KR (2007): Orbitofrontal cortex volume in late life depression: influence of hyperintense lesions and genetic polymorphisms. *Psychol Med* 37(12):1763-73.

- Taylor WD, Zuchner S, **Payne ME**, Messer DF, Doty TJ, MacFall JR, Beyer JL, Krishnan KR (2007): The COMT Val158Met polymorphism and temporal lobe morphometry in healthy adults. *Psychiatry Res* 155:173-7.
- Tupler LA, Krishnan KR, Greenberg DL, Marcovina SM, **Payne ME**, MacFall JR, Charles HC, Doraiswamy PM (2007): Predicting memory decline in normal elderly: Genetics, MRI, and cognitive reserve. *Neurobiol Aging* 28(11):1644-56.
- Bae JN, MacFall JR, Krishnan KR, **Payne ME**, Steffens DC, Taylor WD (2006): Dorsolateral prefrontal cortex and anterior cingulate cortex white matter alterations in late-life depression. *Biol Psychiatry* 60(12):1356-63.
- Chen PS, McQuoid DR, **Payne ME**, Steffens DC (2006): White matter and subcortical gray matter lesion volume changes and late-life depression outcome: a 4-year magnetic resonance imaging study. *International Psychogeriatrics* 18(3):445-56.
- Greenberg DL, **Payne ME**, MacFall JR, Provenzale JM, Steffens DC, Krishnan KRR (2006): Differences in brain volumes among males and female hormone-therapy users and nonusers. *Psychiatry Research: Neuroimaging* 147(2-3):127-34.
- Hannestad J, Taylor WD, McQuoid DR, **Payne ME**, Krishnan KR, Steffens DC, MacFall JR (2006): Negative association between white matter lesion volume and caudate volume in elderly with and without depression. *Int J Geriatr Psychiatry* 21:1193-98.
- MacFall JR, Taylor WD, Rex DE, Pieper S, **Payne ME**, McQuoid DR, Steffens DC, Kikinis R, Toga AW, Krishnan KR (2006): Lobar distribution of lesion volumes in late-life depression: the Biomedical Informatics Research Network (BIRN). *Neuropsychopharmacology* 31(7):1500-7.
- Payne ME**, Hybels CF, Bales CW, Steffens DC (2006): Vascular nutritional correlates of late-life depression. *Am J Geriatr Psychiatry* 14:787-95.
- Beyer JL, Taylor WD, MacFall JR, Kuchibhatla M, **Payne ME**, Provenzale JM, Cassidy F, Krishnan KR (2005): Cortical white matter microstructural abnormalities in bipolar disorder. *Neuropsychopharmacology* 30(12):2225-9.
- Greenwood RS, Tupler LA, Whitt JK, Buu A, Dombeck CB, Harp AG, **Payne ME**, Eastwood JD, Krishnan KR, MacFall JR (2005): Brain morphometry, T2-weighted hyperintensities, and IQ in children with neurofibromatosis type 1. *Arch Neurol* 62:1904-8.
- Steffens DC, Pieper CF, Bosworth HB, MacFall JR, Provenzale JM, **Payne ME**, Carroll BJ, George LK, Krishnan KR (2005): Biological and social predictors of long-term geriatric depression outcome. *Int Psychogeriatr* 17(1):41-56.
- Taylor WD, MacFall JR, **Payne ME**, McQuoid DR, Steffens DC, Provenzale JM, Krishnan KR (2005): Greater MRI lesion volumes in elderly depressed subjects than in control subjects. *Psychiatry Res* 139(1):1-7.
- Taylor WD, Steffens DC, **Payne ME**, MacFall JR, Marchuk DA, Svenson IK, Krishnan KR (2005): Influence of serotonin transporter promoter region polymorphisms on hippocampal volumes in late-life depression. *Arch Gen Psychiatry* 62(5):537-44.
- Beyer JL, Kuchibhatla M, **Payne M**, Moo-Young M, Cassidy F, MacFall J, Krishnan KRR (2004): Caudate volume measurement in older adults with bipolar disorder. *Int J Geriatr Psychiatry* 19:109-14.
- Beyer JL, Kuchibhatla M, **Payne ME**, Moo-Young M, Cassidy F, MacFall J, Krishnan KRR (2004): Hippocampal volume measurement in older adults with bipolar disorder. *Am J Geriatr Psychiatry* 12:613-20.
- Krishnan KR, Taylor WD, McQuoid DR, MacFall JR, **Payne ME**, Provenzale JM, Steffens DC (2004): Clinical characteristics of magnetic resonance imaging-defined subcortical ischemic depression. *Biol Psychiatry* 55:390-7.

- Taylor WD, MacFall JR, **Payne ME**, McQuoid DR, Provenzale JM, Steffens DC, Krishnan KR (2004): Late-life depression and microstructural abnormalities in dorsolateral prefrontal cortex white matter. *Am J Psychiatry* 161:1293-96.
- Lee SH, **Payne ME**, Steffens DC, McQuoid DR, Lai TJ, Provenzale JM, Krishnan KR (2003): Subcortical lesion severity and orbitofrontal cortex volume in geriatric depression. *Biol Psychiatry* 54:529-33.
- Steffens DC, Trost WT, **Payne ME**, Hybels CF, MacFall JR (2003): Apolipoprotein E genotype and subcortical vascular lesions in older depressed patients and control subjects. *Biol Psychiatry* 54:674-81.
- Taylor WD, MacFall JR, Provenzale JM, **Payne ME**, McQuoid DR, Steffens DC, Krishnan KR (2003): Serial MR imaging of volumes of hyperintense white matter lesions in elderly patients: correlation with vascular risk factors. *Am J Roentgenol* 181:571-6.
- Taylor WD, MacFall JR, Steffens DC, **Payne ME**, Provenzale JM, Krishnan KR (2003): Localization of age-associated white matter hyperintensities in late-life depression. *Prog Neuropsychopharmacol Biol Psychiatry* 27:539-44.
- Taylor WD, Steffens DC, MacFall JR, McQuoid DR, **Payne ME**, Provenzale JM, Krishnan KR (2003): White matter hyperintensity progression and late-life depression outcomes. *Arch Gen Psychiatry* 60:1090-6.
- Taylor WD, Steffens DC, McQuoid DR, **Payne ME**, Lee S-H, Lai T-J, Krishnan KR (2003): Smaller orbital frontal cortex volumes associated with functional disability in depressed elders. *Biol Psychiatry* 53:144-9.
- Payne ME**, Fetzer D, MacFall J, Provenzale J, Byrum C, Krishnan K (2002): Development of a semi-automated method for quantification of MRI gray and white matter lesions in geriatric subjects. *Psychiatry Res* 115:63.
- Hsieh MH, McQuoid DR, Levy RM, **Payne ME**, MacFall JR, Steffens DC (2002): Hippocampal volume and antidepressant response in geriatric depression. *Int J Geriatr Psychiatry* 17:519-25.
- Kim do H, **Payne ME**, Levy RM, MacFall JR, Steffens DC (2002): APOE genotype and hippocampal volume change in geriatric depression. *Biol Psychiatry* 51:426-9.
- Steffens DC, **Payne ME**, Greenberg DL, Byrum CE, Welsh-Bohmer KA, Wagner HR, MacFall JR (2002): Hippocampal volume and incident dementia in geriatric depression. *Am J Geriatr Psychiatry* 10:62-71.
- MacFall JR, **Payne ME**, Provenzale JE, Krishnan KR (2001): Medial orbital frontal lesions in late-onset depression. *Biol Psychiatry* 49:803-6.
- Taylor WD, **Payne ME**, Krishnan KR, Wagner HR, Provenzale JM, Steffens DC, MacFall JR (2001): Evidence of white matter tract disruption in MRI hyperintensities. *Biol Psychiatry* 50:179-83.
- Lai T, **Payne ME**, Byrum CE, Steffens DC, Krishnan KR (2000): Reduction of orbital frontal cortex volume in geriatric depression. *Biol Psychiatry* 48:971-5.
- Steffens DC, Byrum CE, McQuoid DR, Greenberg DL, **Payne ME**, Blitchington TF, MacFall JR, Krishnan KR (2000): Hippocampal volume in geriatric depression. *Biol Psychiatry* 48:301-9.
- Steffens DC, MacFall JR, **Payne ME**, Welsh-Bohmer KA, Krishnan KR (2000): Grey-matter lesions and dementia. *Lancet* 356:1686-7.
- Charles HC, Lazeyras F, Krishnan KR, Boyko OB, **Payne M**, Moore D (1994): Brain choline in depression: in vivo detection of potential pharmacodynamic effects of antidepressant therapy using hydrogen localized spectroscopy. *Prog Neuropsychopharmacol Biol Psychiatry* 18:1121-7.

### Peer Reviewed Editorials and Letters

**Payne ME**, Anderson JJ, Steffens DC (2008): Discovering the obvious, damaging the defenseless-Reply. *Nutr Res* 28(11):809-10.

### Reviews

Kim KW, MacFall JR, **Payne ME** (2008): Classification of white matter lesions on magnetic resonance imaging in elderly persons. *Biol Psychiatry* 64(4):273-80.

### Chapters

Bales CW, **Payne ME** (in press): Nutrition and physical activity, in *Textbook of Geriatric Psychiatry, Fourth Edition*. Edited by Blazer DG, Steffens DC, American Psychiatric Publishing, Inc.

**Payne ME** (in press): Nutrition and late-life depression, in *Handbook of Clinical Nutrition in Aging, Second Edition*. Edited by Bales CW, Ritchie C, Humana Press Inc.

### Abstracts

**Payne ME**, Jamerson BD, Potocky CF, Ashley-Koch AE, Speer MC, Steffens DC. Natural food folate and late-life depression. Poster, *American Dietetic Association*, Chicago, IL, October 26, 2008.

**Payne ME**, Trone RJ, Weaver KG, Steffens DC. Dietary glycemic index and brain lesion volume in the elderly. Poster, *American Association for Geriatric Psychiatry*, Orlando, FL, March 16, 2008.

Beyer JL, Kuchibhatla M, **Payne M**, MacFall J, Cassidy F, Krishnan KRR. Frontal gray matter changes in late life bipolar disorder. Poster, *American Association for Geriatric Psychiatry*, Orlando, FL, March 15, 2008.

Jamerson BD, **Payne ME**, Steffens DC, Potocky CF, Rimmler J, Speer MC. Folate related genes and response to antidepressant medications in late-life depression. Poster, *American Association for Geriatric Psychiatry*, Orlando, FL, March 15, 2008.

Steffens DC, Jamerson BD, **Payne ME**, Potocky CF, Rimmler J, Speer M. Folate-related genes and geriatric depression. Poster, *American College of Neuropsychopharmacology*, Boca Raton, FL, December 10, 2007.

Jones LD, **Payne ME**, Smoski MJ, MacFall JR, Beyer JL, Taylor WD. Correlation of measures of white matter integrity with risk-taking behavior in patients with bipolar disorder: A preliminary report. Poster, *Alpha Omega Alpha Symposium*, Duke University, Durham, NC, August 3, 2007.

**Payne ME**, Anderson JJB, Steffens DC. Calcium and vitamin D intakes are positively associated with brain lesions in depressed and non-depressed elders. Poster, *Experimental Biology*, Washington, DC, May 2007 (in FASEB J. 2007 21:837.20)

Doty TJ, **Payne ME**, Steffens DC, Beyer JL, Krishnan KRR, LaBar KS. Age-dependent reductions of amygdala volume in bipolar disorder. Poster, *Cognitive Neuroscience Society*, San Francisco, CA, April 2004.

Greenwood RS, Whitt JK, Tupler L, MacFall J, Eastwood J, Parente AG, Krishnan R, Dombeck CB, **Payne ME**, Buu A. Brain volume and cognition in children with Neurofibromatosis Type 1 (NF1). Poster, *Child Neurology Society*, Ottawa, Canada, October 13, 2004.

MacFall JR, **Payne ME**, Krishnan KRR. MR scanner geometry changes: Phantom measurements compared to intracranial contents calculations. Poster, *International Society of Magnetic Resonance in Medicine*, Kyoto, Japan, May, 2004.

Doty TJ, LaBar KS, **Payne ME**, Krishnan KRR, Steffens DC. The link between bipolar depression and the amygdala: Amygdala volumes in patients of bipolar depression. Poster, *Howard Hughes Symposium, Duke University*, Durham, NC, April 17, 2003.

Beyer JL, Kuchibhatla M, MacFall JR, **Payne ME**, Engstrom EL, Cassidy F, and Krishnan KRR. Gray matter volumetric changes in bipolar disorder. Poster, *American Psychiatric Association Meeting*, 2002.

MacFall JR, Krishnan R, **Payne ME**. Locating white matter lesions in late life depression: An MRI morphometry and statistical mapping (SPM) approach. Abstract, *International Society for Magnetic Resonance in Medicine*, Denver, CO, April 4, 2000.

Hall C, Kapoor C, Robertson K, Robertson W, Kelly J, Fiscus S, Doraiswamy M, Charles C, Krishnan R, Provenzale J, **Payne M**, Byrum C, Blitchington T. Neuroimaging in HIV infection. Poster, *HIV and The Nervous System: Emerging Issues*, Washington DC, April 14-16, 1999.

Charles HC, Lazeyras F, Krishnan KRR, Boyko O, **Payne M**, Moore D. Brain choline in depression: *In vivo* detection of potential pharmacodynamic effects of antidepressant therapy using hydrogen localized spectroscopy. Abstract, *Society of Magnetic Resonance in Medicine*, Berlin, Germany, August 8-14, 1992.

### **Media Coverage**

Nutrients linked to brain lesions. *Science News*, June 16, 2007, 171(24):381.