

Nancy A. Dennis, PhD

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Education

- 2004 The Catholic University of America, Ph.D., Experimental Psychology, (with Distinction)
- 2001 The Catholic University of America, M.A., Experimental Psychology, (with Honors)
- 1997 University of Rochester, B.A., Brain and Cognitive Sciences, (with Honors)
- 1997 University of Rochester, B.A., Psychology

Academic and Professional Experience

- 2008 - Assistant Professor, Department of Psychology, The Pennsylvania State University
- 2008- Affiliated Faculty, The Gerontology Center, The Pennsylvania State University
- 2008- Affiliated Faculty, The Huck Institutes of the Life Sciences & the Intercollege Graduate Degree Program in Neuroscience, The Pennsylvania State University
- 2004 – 2008 Postdoctoral Fellow, CabezaLab, Center for Cognitive Neuroscience, Duke University
- 2004 – 2007 Research Fellow, Center for Aging and Human Development, Duke University Medical Center
- 1999 – 2004 Research Assistant, The Cognitive Aging Lab, The Catholic University of America
- 1999 – 2004 Graduate Student with Prof. James H. Howard, Ph.D., The Catholic University of America
Dissertation title: “Age deficits in implicit sequence learning with response remapping”
Master’s thesis: “Age-related deficits in implicit learning of auditory sequences”
- 1997 – 1999 Research Assistant with Drs. Salvadore Soraci, & Michael Carlin, Ph.Ds., Eunice Kennedy Shriver Center, University of Massachusetts Medical School
- 1996 – 1997 Research Assistant with Prof. James R. Ison, Ph.D., University of Rochester

Funding

- 2009 Level 1 SSRI Funding: “Establishment of a Senior Research Participant Database” (\$5,000 direct costs)
- 2004-2007 Post-doctoral Training Fellowship (NIH/NIA T32 AG000029-30, Behavior and Physiology in Aging), Center for Aging and Human Development, Duke University Medical Center
- 2004 American Psychological Association Dissertation Award (\$1000 direct costs towards research)

Honors and Awards

- 2008 Nominee, Outstanding Woman Leader Award (Women in Science and Engineering at Duke University)
- 2004 Completion of Ph.D. Oral Exam with Distinction
- 2002 McDonnell Fellowship, Summer Institute in Cognitive Neuroscience, Dartmouth Medical School
- 2002 Completion of Ph.D. Comprehensive Examination with Honors
- 1993-1997 University of Rochester Trustees’ Scholarship

Publications**Under review**

Dennis, N.A. & Cabeza, R. Age-related dedifferentiation in implicit and explicit learning systems.

In Press/Published**Peer-Reviewed Journal Articles**

Dennis, N.A., Browndyke, J.N., Stokes, J., Need, A., Burke, J.R., Welsh-Bohmer, K., & Cabeza, R. (in press). Temporal lobe functional activity and connectivity in young adult APOE e4 carriers. *Alzheimer's & Dementia*

Daselaar, S.M., Prince, S.E., Dennis, N.A., Hayes, S.M., Kim, H., & Cabeza, R. (in press). Posterior midline and ventral parietal activity is associated with retrieval success and encoding failure. *Frontiers in Human Neuroscience*

Dennis, N.A., Need, A., LaBar, K.S., WatersMetenier, S., Cirulli, E.T., Kragel, J., Goldstein, D.B., & Cabeza, R. (in press). COMT Val^{108/158} Met genotype affects neural but not cognitive processing in healthy young adults. *Cerebral Cortex*

Prince, S.E., Dennis, N.A., & Cabeza, R. (2009). Encoding and Retrieving Faces and Places: Distinguishing Process- and Stimulus-Specific Differences in Brain Activity. *Neuropsychologia*. 47(11): 2282-9.

Davis, S.W., Dennis, N.A., Buchler, N.G., White, L.E., Madden, D.J., & Cabeza, R. (2009). Assessing the effects of aging on long white matter tracts using diffusion tensor tractography. *NeuroImage*. 46(2): 530-41.

Madden, D.J., Spaniol, J., Costello, M., Bucur, B., White, L., Cabeza, R., Davis, S.W., Dennis, N.A., Provenzale, & Huettel, S.A. (2009). Cerebral white matter integrity mediates adult age differences in cognitive performance. *Journal of Cognitive Neuroscience* 21(2): 289-302.

Howard, J.H., Jr., Howard, D.V., Dennis, N.A., & Kelly, A.J. (2008). Implicit learning of predictive relationships in three-event visual sequences by young and old adults. *Journal of Experimental Psychology: Learning, Memory, & Cognition*. 34(5): 1139-1157.

Dennis, N.A., Hayes, S.M., Prince, S.E., Madden, D.J., Huettel, S.A., & Cabeza, R. (2008). Effects of aging on the neural correlates of successful item and source memory encoding. *Journal of Experimental Psychology: Learning, Memory, & Cognition*. 34(4): 791-808.

Dennis, N.A., Kim, H., & Cabeza, R. (2008). Age-related differences in brain activity during true and false memory retrieval. *Journal of Cognitive Neuroscience*. 20(8): 1390-1402.

➤ Labeled 'MUST READ' in Faculty of 1000

Davis, S.W., Dennis, N.A., Fleck, M., Daselaar, S.M., & Cabeza, R. (2008). Que PASA?: the posterior-anterior shift in aging. *Cerebral Cortex*. 18(5): 1201-1209.

➤ Labeled 'MUST READ' in Faculty of 1000

Howard, D.V., Howard, J.H., Jr., Dennis, N.A., LaVine, S., & Valentino, K. (2008). Aging and implicit learning of a simple association. *Journal of Gerontology B: Psychological Sciences*. 63(2): 100-105.

Dennis, N.A., Kim, H., & Cabeza, R. (2007). Effects of aging on true and false memory formation: an fMRI study. *Neuropsychologia*. 45(14): 3157-3166.

Howard, J.H., Jr., Howard, D.V., Dennis, N.A., & Yankovich, H. (2007). Event timing and age-deficits in higher-order sequence learning. *Aging, Neuropsychology, and Cognition*. 14(6): 647-668.

Dennis, N.A., Daselaar, S., & Cabeza, R. (2007). Effects of aging on transient and sustained successful memory encoding activity. *Neurobiology of Aging*. 28(11): 1749-1758.

Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2006). Implicit sequence learning without motor sequencing in young and old adults. *Experimental Brain Research*. 175(1): 153-64.

Howard, J.H., Jr., Howard, D.V., Dennis, N.A., Yankovich, H., & Vaidya, C.J. (2004). Implicit spatial contextual learning in healthy aging. *Neuropsychology*, 18(1): 124-134.

Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2003). Age-related deficits in learning sequences of spoken words. *Journal of Gerontology B: Psychological Sciences*, 58: 224-227.

Carlin, M.T., Soraci, S.A., Strawbridge, C.P., Dennis, N.A., Loiselle, R., Chechile, N.A. (2003). Detection of changes in naturalistic scenes: Evidence of intelligence-related differences. *American Journal on Mental Retardation*, 108(3): 181-193.

Mackay, H.A., Soraci, S.A., Carlin, M.T., Dennis, N.A., & Strawbridge, C.P. (2002). Guiding visual attention during acquisition of matching to sample. *American Journal on Mental Retardation*, 107(6): 445-454.

Carlin, M.T., Soraci, S.A., Dennis, N.A., Strawbridge, C., & Chechile, N.A. (2002). Guided visual search in individuals with mental retardation. *American Journal on Mental Retardation*, 107(4): 237-251.

Carlin, M.T., Soraci, S.A., Dennis, N.A., Chechile, N.A., & Loiselle, R.C. (2001). Enhancing free recall rates of individuals with mental retardation. *American Journal on Mental Retardation*, 106(4): 314-326.

Book Chapters

Dennis, N.A. & Cabeza, R. (2008). Neuroimaging of Healthy Cognitive Aging. In F.E.M. Craik & T. Salthouse (Eds.). *Handbook of Cognitive Aging, 3rd Edition*. pp. 1-54.

Daselaar, S., Dennis, N., & Cabeza, R. (2007). Age-related changes in the neural substrates of episodic and working memory. Functional neuroimaging evidence. In S. Rombouts, F. Barkhof, and P. Scheltens (Eds.). *Clinical Applications of Functional Brain MRI, Oxford University Press*.

In preparation

Dennis, N.A., Goldstein, D., Need, A., Waters, S., Cabeza, R. & LaBar, K.S. Brain-derived neurotrophic factor Val66Met polymorphism and hippocampal activation during episodic encoding and retrieval tasks.

Dennis, N.A. & Marsh, E.J. Learning errors from fiction: Inferences and misinformation.

Spaniol, J., Madden, D.J., Bucur, B., Moore, S.E., Huettel, S.A., Dennis, N.A., & Cabeza, R. Neural correlates of episodic retrieval in younger and older adults.

Conference Presentations (selected 2001-present)

Dennis, N.A. & Madden, D.J., Kragel, J. & Cabeza, R. (2008). Successful transient and sustained activity associated with incidental and intentional encoding. *Poster presented at the 38th Annual Society for Neuroscience Conference, Washington DC.*

Dennis, N.A. (2008). Age differences in the neural correlates of true and false memories: evidence from encoding and retrieval. *Symposium talk presented at the 49th Annual Meeting of the Psychonomic Society, Chicago, IL.*

Browndyke, J.N., Dennis, N.A., Stokes, J., Welsh-Bohmer, K., Burke, J.R., Goldstein, D. & Cabeza, R. (2008) Genetic Risk for Alzheimer's Disease Influences Brain Activity in Young Adults. *Poster presented at the 11th International Conference on Alzheimer's Disease, Chicago IL.*

Browndyke, J.N., Burke, J.R., Dennis, N.A., Cabeza, R., & Welsh-Bohmer, K. (2008) AChEI Dose-response Effects on the Neural Correlates of Semantic Memory: Preliminary Pharmacological fMRI Data. *Poster presented at the 11th International Conference on Alzheimer's Disease, Chicago IL.*

Dennis, N.A. & Cabeza, R. (2008). Age-Related Dedifferentiation of Memory Systems: An fMRI Study of Explicit and Implicit Learning. *Poster presented at the 12th Cognitive Aging Conference, Atlanta, GA.*

Dennis, N.A., Cabeza, R., Need, A., Waters, S., Goldstein D.B., & LaBar, K.S. (2008). Brain-derived neurotrophic factor Val66Met polymorphism and hippocampal activation during episodic encoding and retrieval tasks. *Poster presented at the 15th Annual Cognitive Neuroscience Society Conference, San Francisco, CA.*

Costello, M.C., Madden, D.J., Spanoil, J., Dennis, N.A., Bucur, B., Cabeza, R., Provenzale, J.M., & Huettel, S.A. (2008). Adult Age Differences in Cortical Activation During Task-Switching. *Poster presented at the 15th Annual Cognitive Neuroscience Society Conference, San Francisco, CA.*

Prince S.E., Daselaar, S.M., Dennis, N.A. & Cabeza, R. (2007). The default mode enigma: Activity in lateral parietal and posterior midline regions is beneficial for episodic retrieval but detrimental to encoding. *Poster presented at the 14th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Dennis, N.A., Waters, S.W., Need, A., LaBar, K.S., Goldstein D.B., & Cabeza, R. (2007). Effects of COMT genotypes on prefrontal and hippocampal activity during successful relational memory encoding and retrieval. *Poster presented at the 14th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Davis, S.W., Dennis, N.A., Thomas, V.A., Emery, M.R., Tarter, A.B., White, L.E., Madden, D.J., & Cabeza, R. (2007). Assessment of age-related changes in white-matter structure using DTI and tensor-based tractography. *Poster presented at the 14th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Hayes, S.M., Dennis, N.A., Prince, S.E., Huettel, S.A., Madden, D.J., & Cabeza, R. (2007). Effects of aging on neural correlates of item and relational memory. *Poster presented at the 14th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Dennis, N.A., Kim, H., Cabeza, R. (2006). The neural basis of true and false recognition in aging. *Talk presented at the 36th Annual Society for Neuroscience Conference.*

Davis, S.W., Dennis, N.A., Cabeza, R. (2006) Que PASA?: the posterior-anterior shift in aging. *Poster*

presented at the 36th Annual Society for Neuroscience Conference, Atlanta, GA.

Dennis, N.A., Kim, H. & Cabeza, R. (2006) Age differences in true and false memory formation: and fMRI study. *Poster presented at the 11th Cognitive Aging Conference, Atlanta, GA.*

Dennis, N.A., Daselaar, S., Cabeza, R. (2005). Distinguishing age-related changes in transient vs. sustained successful encoding activity using a hybrid fMRI approach. *Poster presented at the 35th Annual Society for Neuroscience Conference, Washington, DC.*

Howard, J.H., Jr., Howard, D.V., Yankovich, H., & Dennis, N.A. (2004). Does degrading visual displays mimic age-related implicit sequence learning deficits? *Poster presented at the 57th Gerontological Society of America Annual Meeting, Washington, D. C.*

Howard, J.H., Jr., Kelly, A.J., Dennis, N.A., Vaidya, C., Barr, R., & Howard, D.V. (2004) Age-related deficits in implicit learning of higher-order sequential structure in the absence of motor sequencing. *Poster presented at the 10th Cognitive Aging Conference, Atlanta, GA.*

Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2003). Implicit learning of higher order auditory sequences with response remapping in young and elderly adults. *Poster presented at the 10th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Dennis, N.A., Howard, J.H., Jr., Howard, D.V., Coyle, M., Lynch, B., & Bradley, N. (2003). Implicit higher-order sequence learning by event observation. *Poster presented at the 74th Annual Eastern Psychological Association Conference, Baltimore, MD.*

Dennis, N.A., La Vine, S.P., Howard, D.V., Howard, J.H., Jr. (2002). Aging and implicit learning of a simple regularity: Evidence for learning independent of stimulus characteristics. *Poster presented at the 55th Gerontology Society of America Annual Meeting, Boston, MA.*

Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2002). Implicit sequence learning with response remapping in young and elderly adults. *Poster presented at the 32nd Annual Society for Neuroscience Conference, Orlando, FL.*

Howard, J.H., Jr., Howard, D.V., Dennis, N.A., Vaidya, C., & Japikse, K.C. (2002). Perceptual learning of visual context in healthy elderly. *Poster presented at the 9th Cognitive Aging Conference, Atlanta, GA.*

Howard, D.V., La Vine, S.P., Dennis, N.A., Howard, J.H., Jr. (2001). Aging and implicit learning of a simple positional/sequential regularity. *Poster presented at the 31st Annual Society For Neuroscience Conference, San Diego, CA.*

Yamada, H.M., Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2001). The influence of event duration variability on the implicit learning of serial patterns. *Poster presented at the 72nd Annual Eastern Psychological Association Conference, Washington, D.C.*

Dennis, N.A., Howard, J.H., Jr., & Howard, D.V. (2001). Age -related deficits in implicit learning of auditory sequences. *Poster presented at the 8th Annual Cognitive Neuroscience Society Conference, New York, NY.*

Invited Talks

- Dennis, N.A. (2009). Cognitive Aging: Insights through Neuroimaging. *The Gerontology Center, The Pennsylvania State University.*
- Dennis, N.A. (2008) The Neuroscience of Retrieval in Young Adults (True and False Memories) *National Science Foundation - Adolescent Learning Workshop*
- Dennis, N.A. (2008). Cognitive Neuroscience of Aging: fMRI studies of episodic memory. *The Catholic University of America*
- Dennis, N.A. (2007). Cognitive Neuroscience of Aging: fMRI studies of episodic memory. *University of North Carolina at Chapel Hill*
- Dennis, N.A. & Bucur, B. (2005). Explanations for Age-Related Cognitive Differences: An Overview of Cognitive Aging Psychology. *Center for Aging, Duke University Medical Center*
- Dennis, N.A. (2005). Separable Memory Systems: Implicit and Declarative Learning in Healthy Aging. *University of North Carolina at Chapel Hill*
- Dennis, N.A. (2004) Separable Memory Systems: Implicit and Declarative Learning in Healthy & Pathological Aging, *Center for Cognitive Neuroscience, Duke University*
- Dennis, N.A. (2004). Cognitive Aging: Implicit Sequence Learning & Episodic Encoding. *CAROT Meeting, Center for Aging, Duke University Medical Center*
- Dennis, N.A. (2004). Aging & Implicit Learning: The Importance of Motor and Perceptual Learning in Healthy Aging. *Duke University*
- Dennis, N.A. (2004). Aging & Implicit Learning: The Importance of Motor and Perceptual Learning in Healthy Aging. *Washington University in St. Louis*
- Dennis, N.A. (2004). Aging & Implicit Learning: The Importance of Motor and Perceptual Learning in Healthy Aging. *National Institute of Aging*
- Dennis, N.A. (2003). Aging & Implicit Learning: The Importance of Motor and Perceptual Learning in Healthy Aging. *The Catholic University of America*

Research Interests

Episodic Memory

- encoding and retrieval processes
- item, relational and false memory

Cognitive Aging

- item, relational and false memory
- compensation vs. dedifferentiation
- explicit vs. implicit memory

Neuroimaging

- fMRI
- DTI
- genetic imaging

Implicit Learning

- sequence learning
- priming

Teaching Experience

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| 2009(Fall) | Graduate Seminar(Psych 525) Cognitive Neuroscience of Memory, Penn State University |
| 2009(Fall) | Senior Seminar: Cognitive Neuroscience of Memory (Psych 490), Penn State University |
| 2009(Spring) | Senior Seminar: Cognitive Neuroscience of Memory (Psych 490), Penn State University |
| 2008 | Senior Seminar: Cognitive Aging (Psych 490), Penn State University |
| 2008 | Lecturer, Principles of Cognitive Neuroscience (undergraduate), Duke University |
| 2007 | Lecturer, Principles of Cognitive Neuroscience (graduate), Duke University |
| 2003 | Instructor, Lab in Sensation & Perception, The Catholic University of America |
| 2003 | Teaching Assistant, Sensation & Perception, The Catholic University of America |

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| 2002 & 2003 | Guest Lecturer, Introduction to Psychology, The Catholic University of America |
| 2002 & 2003 | Instructor, Lab in Cognition, The Catholic University of America |
| 2002 & 2003 | Teaching Assistant, Cognition, The Catholic University of America |
| 2002 & 2003 | Guest Lecturer, Cognition, The Catholic University of America |
| 2001 | Lecturer, Statistics, The Catholic University of America |
| 2001 | Teaching Assistant, Statistics, The Catholic University of America |

Ad Hoc Reviewer

Cerebral Cortex • Journal of Experimental Psychology: Learning Memory & Cognition • NeuroImage • Neurobiology of Aging • Psychology & Aging • Journal of Cognitive Neuroscience • Neuropsychologia • Neuroscience & Behavioral Reviews • Brain Research • Hippocampus • Cognitive, Affective, & Behavioral Neuroscience • Aging, Neuropsychology & Cognition • Cortex • Memory

Mentoring

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| 2008-present | <p><u><i>Cognitive Aging & Neuroimaging Lab, Penn State</i></u> Mentored undergraduate and graduate research on memory using behavioral and fMRI methods</p> <ul style="list-style-type: none"> ○ Graduate students <ul style="list-style-type: none"> - Avery Rizio (1st year) ○ Undergraduates Honors Thesis <ul style="list-style-type: none"> - Deepa Ramasamy (2010) - Jonathan Harris (2010) |
| 2004–2008 | <p><u><i>Center for Cognitive Neuroscience, Duke University.</i></u> Mentored undergraduate and graduate research on memory using behavioral and fMRI methods</p> <ul style="list-style-type: none"> ○ Graduate students included Peggy St. Jacques, Simon Davis*, Maureen Ritchey, Ashley Osborne ○ Undergraduate students included Rachel Kern, Vanessa Thomas*, Mathew Emery*, and Micah Adams ○ Research Assistants included Sheena Waters* and Jared Stokes* |
| 1999–2004 | <p><u><i>Department of Psychology, The Catholic University of America</i></u> Mentored undergraduate and graduate research on implicit learning and aging</p> <ul style="list-style-type: none"> ○ Graduate students included Jennifer Romano ○ Undergraduate students included Sean LaVine*, Nicole Bradley*, Bridget Lynch*, Alisa Padon, and Andrew Kelly* |

* my work with these students have lead to co-authorships on both posters and peer-reviewed publications