

**Derek A. Hamilton**

**VITA**

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NCBI : <http://www.ncbi.nlm.nih.gov/sites/myncbi/derek.hamilton.1/bibliography/40329263/public/>

## **Educational History**

- B.A. 1996. The University of North Carolina at Charlotte. Psychology.
- M.S. 1998. The University of New Mexico. Psychology.  
Thesis title: Categorical picture-word interference for vocal and manual production  
Tasks: Evidence against the dual-coding and name retrieval hypotheses  
Thesis advisor: Paul C. Amrhein, Ph.D.
- Ph.D. 2003. The University of New Mexico. Psychology.  
Dissertation title: A behavioral and comparative analysis of human place learning in a virtual Morris water task.  
Dissertation advisors: Robert J. Sutherland, Ph.D. and Michael J. Dougher, Ph.D.
- Postdoctoral fellow. 2003-4. Canadian Centre for Behavioural Neuroscience.  
Advisor: Bryan Kolb, Ph.D.

## **Employment History**

- 2004-5 Visiting Assistant Professor of Psychology and Neurosciences  
The University of New Mexico, Albuquerque, NM 87131
- 2005-2010 Assistant Professor of Psychology  
The University of New Mexico, Albuquerque, NM 87131
- 2010-2016 Associate Professor of Psychology  
Chair: *Cognition, Brain and Behavior* (2011-present).  
The University of New Mexico, Albuquerque, NM 87131
- **2016-Present Professor of Psychology**  
Chair: *Cognition, Brain and Behavior* (2011-present).  
**The University of New Mexico, Albuquerque, NM 87131**

## **Membership in Professional Societies and Organizations**

- Research Society on Alcoholism (RSA)
- Fetal Alcohol Spectrum Disorder Study Group (FASDSG)
- Society for Neuroscience

## **Professional Recognition, Honors, and Awards**

- Arts and Sciences Award for Teaching Excellence, 2009-2010. The University of New Mexico
- 15th annual Benjamin Franklin Haught Memorial Lecture Award, 2003.  
Department of Psychology, The University of New Mexico
- Postdoctoral fellowship, 2003-4. Alberta Heritage Foundation for Medical Research  
\$35,000 annual stipend and \$3,000 research allowance for 2 years.
- Outstanding New Investigator, 2003. Fetal Alcohol Syndrome Study Group
- Outstanding Senior in Psychology, University of North Carolina at Charlotte, 1996.

## RESEARCH INTERESTS

My research interests include two major topics: 1) the behavioral and neurobiological consequences of moderate prenatal alcohol exposure (PAE), and 2) the basic behavioral and neurobiological processes involved in mammalian spatial navigation. I utilize a range of structural, electrophysiological, and immediate early gene expression techniques to address basic questions regarding the effects of PAE on neural plasticity, brain function, and behavior. Current work is focused on the consequences of moderate PAE on synaptic plasticity and glutamatergic signaling with an emphasis on frontal cortex circuitry underlying important behavioral consequences of PAE, including behavioral flexibility, spatial learning and memory, and social interaction. An second ongoing line of research in my laboratory is aimed at better understanding the basic behavioral and cognitive processes involved in common laboratory tests of spatial learning and memory, including the Morris water task for rodents and the virtual Morris water task for humans, with the goal of advancing understanding of brain-behavior relationships in these and related tasks that are commonly used to study relationships between neural and behavioral/cognitive processes.

## ARTICLES IN REFEREED JOURNALS [ \*graduate or undergraduate student first-authored paper]

- \*67. Barto, D., Bird, C.W., **Hamilton, D.A.**, & Fink, B.C. (2016). The Simple Video Coder: A free tool for efficiently coding social video data. *Behavior Research Methods, in press*.
- \*66. Rodriguez, C. I., Davies, S., Calhoun, V., Savage, D.D., & **Hamilton, D. A.** (2016). Moderate prenatal ethanol exposure alters functional connectivity in the adult rat brain. *Alcoholism: Clinical and Experimental Research, in press*.
- \*65. Rodriguez, C. I., Magcalas, C. M., Barto, D., Fink, B. C., Rice, J. P., Bird, C. W., Davies, S., Pentkowski, N.S., Savage, D.D., & **Hamilton, D. A.** (2016). Effects of sex and housing on social, spatial, and motor behavior in adult rats exposed to moderate levels of alcohol during prenatal development. *Behavioural Brain Research, 313*, 233-243.
64. Kremmyda, O., Huefner, K., Flanagan, V. L., **Hamilton, D. A.**, Linn, J., Strupp, M., . . . Brandt, T. (2016). Beyond Dizziness: Virtual Navigation, Spatial Anxiety and Hippocampal Volume in Bilateral Vestibulopathy. *Frontiers in Human Neuroscience, 10*. doi:10.3389/fnhum.2016.00139
63. Ceccanti, M., **Hamilton, D.**, Coriale, G., Carito, V., Aloe, L., Chaldakov, G., . . . Fiore, M. (2015). Spatial learning in men undergoing alcohol detoxification. *Physiology & Behavior, 149*, 324-330. doi:10.1016/j.physbeh.2015.06.034
- \*62. Rice, J.P., Wallace, D.G., & **Hamilton, D.A.** (2015). Lesions of the hippocampus or dorsolateral striatum disrupt distinct aspects of spatial navigation strategies based on proximal and distal information in a cued variant of the Morris water task. *Behavioural Brain Research, 289*, 105-117.
61. Bird, C.W., Candelaria-Cook, F.T., Magcalas, C.M., Davies, S., Valenzuela, C.F., Savage, D.D., & **Hamilton, D.A.** (2015). Moderate prenatal alcohol exposure enhances GluN2B containing NMDA receptor binding and ifenprodil sensitivity in rat ventrolateral frontal cortex. *PLoS ONE, 10(3):e0118721*.
60. **Hamilton, D.A.**, & Brigman, J.L. (2015). Behavioral flexibility in rats and mice: Contributions of distinct frontocortical regions. *Genes, Brain, and Behavior, 14*, 4-20.
59. Tropp-Sneider, J., **Hamilton, D.A.**, Cohen-Gilbert, J.E., Crowley, D.J., Rosso, I.M., & Silveri, M.M. (2015). Sex differences in spatial navigation and perception in human adolescents and emerging adults. *Behavioural Processes, 111*, 42-50.
- \*58. Peterson, V.L., McCool, B.A., & **Hamilton, D.A.** (2015). Effects of ethanol exposure and withdrawal on dendritic morphology and spine density in the nucleus accumbens core and shell. *Brain Research, 1594*, 125-135.
57. **Hamilton, D.A.**, Magcalas, C.M., Barto, D., Bird, C.W., Rodriguez, C.I., Fink, B.C., Pellis, S.M., Davies, S., & Savage, D.D. (2014). Moderate prenatal alcohol exposure and quantification of social behavior in adult rats. *Journal of Visualized Experiments, 94*, e52407, doi:10.3791/52407.
56. Miller, M.G., **Hamilton, D.A.**, Joseph, J.A., Shukitt-Hale, B. (2014). Mobility and cognition: End-points for dietary interventions in aging. *Nutrition and Aging, 2*, 213-222.

55. Varaschin, R.K., Rosenberg, M.J., **Hamilton, D.A.**, & Savage, D.D. (2014). Differential effects of the histamine H<sub>3</sub> receptor agonist methimepip on dentate granule cell excitability, paired-pulse plasticity and long-term potentiation in prenatal alcohol-exposed rats. *Alcoholism: Clinical and Experimental Research*, 38, 1902-1911.
- \*54. Akers, K.G., & **Hamilton, D.A.** (2014). Effect of high-frequency stimulation of the perforant path on a previously acquired spatial memory: Influence of memory strength and reactivation. *PLoS ONE*, 9, e100766.
53. **Hamilton, D.A.**, Barto, D., Rodriguez, C.I., Magcalas, C., Fink, B.C., Rice, J.P., Bird, C.W., Davies, S., & Savage, D.D. (2014). Effects of moderate prenatal ethanol exposure and age on social behavior, spatial response perseveration errors and motor behavior. *Behavioural Brain Research*, 269, 44-54.
52. **Hamilton, D.A.** (2014). The Importance of Measurement Precision and Behavioral Homologies in Evaluating the Behavioral Consequences of Fetal Ethanol Exposure : Commentary on Williams et al. ("Sensory-Motor Deficits in Children with Fetal Alcohol Spectrum Disorder Assessed Using a Robotic Virtual Reality Platform"). *Alcoholism: Clinical and Experimental Research*, 38, 40-43.
- \*51. Candelaria-Cook, F.T., & **Hamilton, D.A.** (2014). Chronic cannabinoid agonist (WIN 55,212-2) exposure alters hippocampal dentate gyrus spine density in adult rats, *Brain Research*, 1542, 104-110. PMID: PMC3883362.
50. Wiener-Vacher, S.R., **Hamilton, D.A.**, & Wiener, S.I. (2013). Vestibular activity and cognitive development in children: Perspectives. *Frontiers in Integrative Neuroscience*, 7, 1-13. doi: 10.3389/fnint.2013.00092.
49. Clark, B.J., Rice, J.P., Akers, K.G., Candelaria-Cook, F.T., Taube, J.S., & **Hamilton, D.A.** (2013). Lesions of the dorsal tegmental nuclei impair performance in cued, place, and directional variants of the Morris water task. *Behavioral Neuroscience*, 127, 566-581.
48. Köppen, J.R., Winter, S.S., Loda, E.L., Apger, B.P., Grimelli, D., **Hamilton, D.A.**, & Wallace, D.G. (2012). Analysis of movement kinematics on analogous spatial learning tasks demonstrates conservation of direction and distance estimation across humans (*Homo sapiens*) and rats (*Rattus norvegicus*). *Journal of Comparative Psychology*, 127, 179-193.
47. Redhead, E.S., **Hamilton, D.A.**, Parker, M.O., Chan, W., & Allison, C. (2013) Evidence that modifying salience of geometric and landmark cues influences which controls navigation. *Learning and Behavior*, 41, 179-191.
46. Abbott, C.C., Jaramillo, A., Wilcox, C.E., & **Hamilton, D.A.** (2013). Antipsychotic drug effects in schizophrenia: a review of longitudinal fMRI investigations and neural interpretations. *Current Medicinal Chemistry*, 20, 428-437.
45. Hanlon, F.M., Houck, J.M., Kilmaj, S.D., Caprihan, A., Mayer, A., Weisend, M.P., Bustillo, J., **Hamilton, D.A.**, & Tesche, C.D. (2012). Fronto-temporal Anatomical Connectivity and Working-Relational Memory Performance Predict Everyday Functioning in Schizophrenia. *Psychophysiology*, 49, 1340-1352.
44. Wray, A.M., Dougher, M.J., **Hamilton, D.A.**, & Guinther, P. (2012). Examining the Reinforcing Properties of Making Sense: A Preliminary Study. *Psychological Record*, 62, 599-622.
43. Barkas, L.J., Redhead, E.S., Taylor, M., Shtaya, A., **Hamilton, D.A.**, & Gray, W.P. (2012). Fluoxetine restores spatial learning but not accelerated forgetting in mesial temporal lobe epilepsy. *Brain*, 135, 2358-2374.
- \*42. Rice, J.P., Suggs, L.E., Candelaria-Cook, F.T., Akers, K.G. Lusk, A.V., Parker, M., Savage, D.D., & **Hamilton, D.A.** (2012). Effects of exposure to moderate levels of ethanol during prenatal brain development on dendritic length, branching, and spine density in the nucleus accumbens and dorsal striatum of adult rats. *Alcohol*, 46, 577-584.
41. Murty, V.P., LaBar, K.S., **Hamilton, D.A.**, & Adcock, R.A. (2011). Is all motivation good for learning? Dissociable influences of approach and avoidance motivation in declarative memory. *Learning and Memory*, 18, 712-717.

40. Knierim, J.J., & **Hamilton, D.A.** (2011). Framing spatial cognition: Neural representations of proximal and distal reference frames and their role in navigation. *Physiological Reviews*, *91*, 1245-1279.
39. Hübner, K., Binetti, C., **Hamilton, D.A.**, Stephan, T., Flanagin, V.L., Linn, J., Labudda, K., Markowitsch, H., Glasauer, S., Jahn, K., Strupp, M., & Brandt, T. (2011) Structural and functional plasticity of the hippocampal formation in professional dancers and slackliners. *Hippocampus*, *8*, 855-865.
- \*38. Akers, K.G., Candelaria-Cook, F.T., Rice, J.P., Johnson, T.E. & **Hamilton, D.A.** (2011). Cued platform training reveals early development of directional responding among preweanling rats in the Morris water task. *Developmental Psychobiology*, *53*, 1-12.
37. Savage, D.D., Rosenberg, M.J., Wolff, C.R., Akers, K.G., El-Emawy, A., Staples, M.C., Varaschin, R.K., Wright, C.A., Seidel, J.L., Caldwell, K.K., & **Hamilton, D.A.** (2010). Effects of a Novel Cognition-Enhancing Agent On Fetal Ethanol-Induced Learning Deficits. *Alcoholism: Clinical and Experimental Research*, *34*, 1793-1802.
36. **Hamilton, D.A.**, Candelaria-Cook, F.T., Akers, K.G., Rice, J.P., Maes, L.I., Rosenberg, M., Valenzuela, C.F., & Savage, D.D. (2010). Patterns of social-experience-related *c-fos* and *Arc* expression in the frontal cortices of rats exposed to saccharin or moderate levels of ethanol during prenatal brain development. *Behavioural Brain Research*, *214*, 66-74.
35. Varaschin, R. K., Rosenberg, M.J., Akers, K.G., **Hamilton, D.A.**, & Savage, D.D. (2010). Effects of the Cognition-Enhancing Agent ABT-239 on Fetal Ethanol-induced Deficits in Dentate Gyrus Synaptic Plasticity. *Journal of Pharmacology and Experimental Therapeutics*, *334*, 191-198.
34. Barkas, L.J., Henderson, J.L., **Hamilton, D.A.**, Redhead, E.S., & Gray, W.P. (2010). Selective temporal resections and spatial memory impairments: Cue dependent lateralization effects. *Behavioural Brain Research*, *208*, 535-544.
33. **Hamilton, D.A.**, Akers, K.G., Rice, J.P., Johnson, T.E., Candelaria-Cook, F.T., Maes, L.I., Rosenberg, M., Valenzuela, C.F., & Savage, D.D. (2010). Prenatal exposure to moderate levels of ethanol alters social behavior in adult rats: Relationship to structural plasticity and immediate early gene expression in frontal cortex. *Behavioural Brain Research*, *207*, 290-304.
32. Hübner, K., Stephan, T., **Hamilton, D.A.**, Kalla, R., Glasauer, S., Strupp, M., & Brandt, T. (2009). Gray matter atrophy after chronic complete unilateral vestibular deafferentation. *Annals of the New York Academy of Sciences*, *1164*, 383-385.
31. **Hamilton, D.A.**, Johnson, T.E., Redhead, E.S., & Verney, S.P. (2009). Control of human and rodent navigation by room and apparatus cues. *Behavioural Processes*, *81*, 154-169.
30. **Hamilton, D.A.**, Akers, K.G., Johnson, T.E., Rice, J.P., Candelaria, F.T., & Redhead, E.S. (2009). Evidence for a shift from place navigation to directional responding in one variant of the Morris water task. *Journal of Experimental Psychology: Animal Behavior Processes*, *35*, 271-278.
- \*29. Akers, K.G., Candelaria, F.T., Rice, J.P., Johnson, T.E., & **Hamilton, D.A.** (2009). Delayed development of place navigation compared to directional responding in preweanling rats. *Behavioral Neuroscience*, *123*, 267-275.
28. Redhead, E.S., & **Hamilton, D.A.** (2009). Evidence of blocking with geometric cues in a virtual watermaze. *Learning and Motivation*, *40*, 15-34.
27. Silasi, G., **Hamilton, D.A.**, & Kolb, B. (2008). Social instability blocks functional restitution following motor cortex stroke in rats. *Behavioural Brain Research*, *188*, 219-226.
26. **Hamilton, D.A.**, Akers, K.G., Johnson, T.E., Rice, J.P., Candelaria, F.T., Sutherland, R.J., Weisend, M.P., & Redhead, E.S. (2008). The relative influence of place and direction in the Morris water task. *Journal of Experimental Psychology: Animal Behavior Processes*, *34*, 31-53.
- \*25. Akers, K.G., Candelaria, F.T., & **Hamilton, D.A.** (2007). Preweanling rats solve the Morris water task via directional navigation. *Behavioral Neuroscience*, *121*, 1426-1430.
- \*24. Akers, K.G., & **Hamilton, D.A.** (2007). Comparison of the developmental trajectories of place and cued navigation in the Morris water task. *Developmental Psychobiology*, *49*, 553-564.

23. Dougher, M.J., **Hamilton, D.A.**, Fink, B.C., & Harrington, J. (2007). Transformation of the discriminative and eliciting functions of generalized relational stimuli. *Journal of the Experimental Analysis of Behavior*, *88*, 179-197.
22. Redhead, E.S., & **Hamilton, D.A.** (2007). Interaction between locale and taxon strategies in human spatial learning. *Learning and Motivation*, *38*, 262-283.
21. Hüfner, K., **Hamilton, D.A.**, Kalla, R., Stephan, T., Brüning, R., Ma, J., Markowitsch, H.J., Labudda, K., Schichor, C., Strupp, M., & Brandt, T. (2007). Spatial memory and hippocampal volume in humans with unilateral vestibular deafferentation. *Hippocampus*, *17*, 471-485.
20. **Hamilton, D.A.**, Akers, K.G., Weisend, M.P., & Sutherland, R.J. (2007). How do room and apparatus cues control navigation in the Morris water task?: Evidence for distinct contributions to a movement vector. *Journal of Experimental Psychology: Animal Behavior Processes*, *33*, 100-114.
19. Hanlon, F.M., Weisend, M.P., **Hamilton, D.A.**, Jones, A., Thoma, R.J., Huang, M-X., Martin, K., Yeo, R.A., Miller, G.A., & Cañive, J.M. (2006). Impairment on the hippocampal-dependent virtual Morris water task in schizophrenia. *Schizophrenia Research*, *87*, 67-80.
18. Wallace, D.G., **Hamilton, D.A.**, & Whishaw, I.Q. (2006). Topographic and kinematic characteristics of movement support a role for dead reckoning in organizing exploratory behavior. *Animal Cognition*, *9*, 219-228.
17. Clark, B.J., **Hamilton, D.A.**, & Whishaw, I.Q. (2006). Motor Activity (exploration) and formation of home bases in mice (C57BL/6) influenced by visual and tactile cues: modification of movement geometry, distance, location, and speed. *Physiology & Behavior*, *87*, 805-816.
16. Brandt, T. Schautzer, F., **Hamilton, D.A.**, Brüning, R., Markowitsch, H.J., Kalla, R., Darlington, C., Smith, P., & Strupp, M. (2005). Vestibular loss causes hippocampal atrophy and impaired spatial memory in humans. *Brain*, *128*, 2732-2741.
15. Clark, B.J., Hines, D.J., **Hamilton, D.A.**, & Whishaw, I.Q. (2005). Organized exploratory movements are intact in rats with hippocampal lesions. *Behavioural Brain Research*, *163*, 91-99.
14. Driscoll, I., **Hamilton, D.A.**, Yeo, R.A., Brooks, W.M., & Sutherland, R.J. (2005). Virtual navigation in humans: The impact of age, sex, and hormones on place learning. *Hormones and Behavior*, *47*, 326-335.
13. **Hamilton, D.A.**, & Kolb, B. (2005). Differential effects of nicotine and complex housing on subsequent experience-dependent structural plasticity in the nucleus accumbens. *Behavioral Neuroscience*, *119*, 355-365.
12. Sutherland, R.J., & **Hamilton, D.A.** (2004). Rodent spatial navigation: At the crossroads of cognition and movement. *Neuroscience & Biobehavioral Reviews*, *28*, 687-697.
11. Villarreal, G. **Hamilton, D.A.**, Graham, D.P., Driscoll, I., Qualls, C., Petropoulos, H., & Brooks, W.M. (2004). Reduced area of the corpus callosum in PTSD. *Psychiatry Research*, *131*, 227-235.
10. **Hamilton, D.A.**, Rosenfelt, C.S., & Whishaw, I.Q. (2004). Sequential control of navigation by locale and taxon cues in the Morris water task. *Behavioural Brain Research*, *154*, 385-397.
9. Schautzer, F., **Hamilton, D.**, Kalla, R., Strupp, M, & Brandt, T. (2003). Spatial learning deficits in patients with chronic bilateral vestibular failure. *Annals of the New York Academy of Sciences*, *1004*, 316-324.
8. Driscoll, I., **Hamilton, D.A.**, Petropoulos, H., Yeo, R.A., Brooks, W.M., Baumgartner, R.N., & Sutherland, R.J. (2003). The aging hippocampus: Cognitive, structural, and biochemical findings. *Cerebral Cortex*, *13*, 1344-1351.
7. **Hamilton, D.A.**, Kodituwakku, P.W., Sutherland, R.J., & Savage, D.D. (2003). Children with Fetal Alcohol Syndrome are impaired at place learning but not cued-navigation in a virtual Morris water task. *Behavioural Brain Research*, *143*, 85-94.
6. Villarreal, G., Petropoulos, H., **Hamilton, D.A.**, Rowland, L.M., Horan, W.P., Griego, J.A., Moreshead, M., Hart, B.L., & Brooks, W.M. (2002). Proton-MRS of the medial temporal lobes and occipital white matter in PTSD: Preliminary results. *Canadian Journal of Psychiatry*, *47*, 666-670.

5. Villarreal, G., **Hamilton, D.A.**, Petropoulos, H., Driscoll, I., Rowland, L.M., Griego, J.A., Kodituwakku, P.W., Hart, B.L., Escalona, R., & Brooks, W.M. (2002). Reduced hippocampal volume and total white matter volume in PTSD. *Biological Psychiatry*, 52, 119-125.
4. **Hamilton, D.A.**, Driscoll, I., & Sutherland, R.J. (2002). Human place learning in a virtual Morris water task: Some important constraints on the flexibility of place navigation. *Behavioural Brain Research*, 129, 159-170.
3. Sutherland, R.J., Weisend, M.P., Mumby, D., Astur, R.S., Hanlon, F.M., Koerner, A., Thomas, M.J., Wu, Y., Moses, S., Cole, C., **Hamilton, D.A.**, & Hoelsing, J.M. (2001). Retrograde amnesia after hippocampal damage: Recent vs. remote memories in two tasks. *Hippocampus*, 11, 27-42.
2. Amrhein, P.C., Bond, J.K., & **Hamilton, D.A.** (1999). Locus of control and the age difference in free recall from episodic memory. *Journal of General Psychology*, 126, 146-161.
1. **Hamilton, D.A.**, & Sutherland, R.J. (1999). Blocking in human place learning: Evidence from virtual navigation. *Psychobiology*, 27, 453-461.

### **BOOK CHAPTERS AND ENCYCLOPEDIA ENTRIES**

2. **Hamilton, D.A.**, & Barto, D. (2015). Navigation in Virtual Space: Psychological and Neural Aspects. International Encyclopedia of Social and Behavioral Sciences. Ed. James Wright. Elsevier Ltd.: Oxford, UK.
1. **Hamilton, D.A.**, Prusky, G.T., & Sutherland, R.J. (2006). The Morris water task and related methods. In Tasks and Techniques: A sampling of methodologies for the investigation of animal learning, behavior, and cognition, Ed. Matthew J. Anderson. Nova Science Publishers, Inc. ISBN 1-60021-126-7.

### **INVITED TALKS/LECTURES AND REFEREED PRESENTATIONS/ABSTRACTS**

14. The consequences of moderate prenatal ethanol exposure on spatial learning, memory, and cognition. Northern Illinois University. March 30, 2015.
13. The prefrontal consequences of moderate prenatal alcohol exposure. University of Nevada, Las Vegas (UNLV). September 7, 2014.
12. Fragmentation of local view spaces. Vespucci Workshop on Brain and Space. Champalimaud Centre for the Unknown, Lisbon, Portugal. Sept, 2014.
11. Framing the behavioral constituents of spatial navigation in rats and humans. Behaviour (joint meeting of the International ethological Congress and the Association for the Study of Animal Behaviour). Newcastle, UK. August 7, 2013.
10. Control of rat and human spatial navigation by room and apparatus reference frames. Hippocampal Spring Conference, Taormina, Sicily, Italy. June 9, 2013.
- 9.. Framing the behavioral constituents of spatial navigation in rats and humans. College de France, Paris. June 6, 2013.
8. Framing spatial navigation in rats and humans. American Psychological Association, Orlando. FL. August 4, 2012.
7. Framing the behavioral and neurobiological constituents of spatial navigation. Arizona State University Tempe, AZ, Oct 12, 2011.
6. Framing the behavioral and neurobiological constituents of spatial navigation. Invited talk, 4<sup>th</sup> annual meeting of the Four Corner Association for Behavior Analysis, Santa Fe. NM, April 1, 2011.
5. The relative and relational features of stimulus control in human and rodent spatial navigation. Invited address at the annual meeting of the American Psychological Association, Divisions 25, 3, and 6, Boston, MA, August, 2008.
4. The relative influence of place and direction in human and rodent spatial navigation. Invited address at the Meeting of the Society for the Quantitative Analysis of Behavior (SQAB), Chicago, IL. May, 2008.
3. Jain, E., Healy, M. J., Saland, L., **Hamilton, D.**, Allan, A., Caldwell, K., & Caudell, T. P.. (2005-6). Hypergraphs: Organizing complex natural neural networks. IEEE Proceedings of the Third International

Conference on Intelligent Sensing and Information Processing.

2. A combined structural and functional neuroimaging study in children with Fetal Alcohol Syndrome. Annual meeting of the Research Society on Alcoholism, Vancouver, BC, Canada. June, 2004

1. A multimodal neuroimaging study in children with Fetal Alcohol Syndrome. Annual meeting of the Fetal Alcohol Syndrome Study Group, Fort Lauderdale, FL. June, 2003.

## **RESEARCH FUNDING**

### **Active Funding:**

#### **Title: Fetal-ethanol-induced deficits in agranular insular cortex function**

Agency: NIH/NIAAA

Proposal #: AA019462

Funding Period: Mar 1, 2011 – February 28, 2016

Total costs: \$1.17M

Role: PI

#### **Title: Fetal Ethanol Effects on Histaminergic Regulation of Neurotransmission**

Agency: NIH/NIAAA

Proposal #: 1R01AA19884-01A1

Funding Period : 7/2011-6/2016

PI: D.D. Savage, Ph.D.

Total Costs : \$1.04M

Role: Co-I

#### **Title: Fetal ethanol-induced behavioral deficits: Mechanisms, diagnosis and Intervention**

Agency: NIH/NIAAA

Proposal # ; 1P50AA022534-01

Funding Period : 08/2014 – 06/2019

PI : D.D. Savage

Role : Co-Investigator (Scientific core)

#### **Title : Alcohol research training in neurosciences**

Agency : NIH/NIAAA

Proposal # : 2T32 AA014127

Funding Period : Aug 1, 2013 – July 31,2018

PI : C. Fernando Valenzuela, Ph.D.

Annual costs : \$118,504

Description : The main goal of the project is to train pre-doctoral students in neuroscience-related alcohol research.

Role: Mentor

### **Pending Funding:**

#### **Title: Mechanisms of Novel Therapeutic Prevention of Neurological Deficits Associated with FASD**

Agency: NIH/NIAAA

Proposal # : 1R21 AA024390-01A1

Funding Period : 7/2016-6/2018

PIs: Paul Drew, Ph.D. and Cynthia Kane, Ph.D.

Total Direct Costs : \$275,000

Role: Co-I

#### **Title: Prenatal Alcohol Exposure and Neural Representations of Space**

Agency: NIH/NIAAA

Proposal # : R21 Number Pending

Funding Period : 7/2016-6/2018

Total Direct Costs : \$275,000

Role: PI

**Past Funding:****Title: Prenatal ethanol exposure and neural representations of space**

Agency: NIH/NIAAA  
Proposal # ; 1P50AA022534-01  
Funding Period : 12/2014 – 05/2015  
Total Costs : \$27,500  
Role : Pilot project co-PI with B.J. Clark

**Title : Effects of chronic exposure to the atypical antipsychotic olanzapine on functional networks in the anesthetized rat brain**

Agency : NIH/NCRR  
Proposal #: P20RR021938  
Total Costs: \$25,000  
Funding Period : 4/2011-3/2012  
Role : PI on 2011-12 pilot project  
This is a pilot project for the Mind Research Network Schizophrenia COBRE (*Neural Mechanism of Schizophrenia*, PI : Bustillo)

**Title : Fetal alcohol induced behavioral deficits: Mechanisms, diagnosis and intervention (P20 Center Grant)**

Agency: NIH/NIAAA  
Proposal #: 1 P2 AA017068-01  
PI : Daniel Savage, Ph.D.  
Funding Period: July 1, 2008 – June 30, 2013.  
Role: Co-investigator on project #4, "Effects of novel cognition enhancing agents on fetal alcohol induced behavioral deficits."

**Title : Screening putative therapeutic agents for fetal-alcohol-induced learning deficits**

Agency : NIH/NIAAA  
Proposal #: 1 R21 AA016619  
Funding Period : Mar 31, 2007 – Mar 30, 2010  
Direct costs: \$275,000  
PI : Daniel Savage, Ph.D.  
Role: Co-PI

**Title : Prenatal ethanol, social behavior, and prefrontal cortex**

Agency : NIH/NIAAA  
Proposal #: 1 R21 AA015356-01A2  
Funding Period : Mar 31, 2006 – Mar 30, 2009  
Direct costs: \$262,500  
Total costs: \$381,500  
Role: PI

**Alberta Heritage Foundation for Medical Research (AHFMR) Postdoctoral Research Grant****Dates: 1/2003-8/2004**

Project Title: "Effects of stimulant drugs on experience-dependent synaptic plasticity"  
The goal of this research project is to characterize the effects of stimulant-induced changes in dendritic structure and spine density on subsequent experience-dependent structural plasticity.  
Role: Postdoctoral-fellow; Tissue-preparation (Golgi-Cox staining) and quantification of dendritic length, branching, and spine density: Behavioral analysis (e.g., learning and motor behavior).