

Emily Elizabeth Bray

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PROFESSIONAL EXPERIENCE

University of Arizona, School of Anthropology, Tucson, AZ and
Canine Companions for Independence®, Santa Rosa, CA
Post-doctoral Research Associate
Focus: Longitudinal cognitive and behavioral studies in assistance dogs
Supervisors: Dr. Evan MacLean and Dr. Brenda Kennedy
May 2017 – Present

EDUCATION

University of Pennsylvania, Philadelphia, PA
PhD in Psychology (Concentration in Animal Learning and Behavior)
Center for Teaching & Learning Teaching Certificate in College and University Teaching
Dissertation: “A longitudinal study of maternal style, young adult temperament and cognition, and program outcome in a population of guide dogs”
Advisors: Dr. Robert Seyfarth, Dr. Dorothy Cheney, and Dr. James Serpell
May 2017

University of Pennsylvania, Philadelphia, PA
M.A. in Psychology
Thesis: “Dogs as a model system for understanding problem-solving: Exploring the affective and cognitive mechanisms that impact inhibitory control”
Advisors: Dr. Robert Seyfarth, Dr. Dorothy Cheney, and Dr. James Serpell
May 2013

Duke University, Durham, NC
B.A. in Cognitive Psychology and English (*summa cum laude*), Graduation with Distinction in Psychology
Psychology GPA 4.0, Cumulative GPA 3.97
Graduation with Distinction Thesis: “Factors Affecting Inhibitory Control in Dogs”
Advisors: Dr. Brian Hare and Dr. Stephen Mitroff
May 2012

University College London, London, UK
Semester Abroad through Butler University’s Institute for Study Abroad
August 2010 - December 2010

PEER-REVIEWED PUBLICATIONS

Bray, E.E., Gruen, M.E., Gnanadesikan, G.E., Horschler, D.J., Levy, K.M., Kennedy, B.S., Hare, B.A., & MacLean, E.L. (2020). Cognitive characteristics of 8- to 10-week-old assistance dog puppies. *Animal Behaviour*, 166, 193-206. doi:10.1016/j.anbehav.2020.05.019.

Byrne, M., **Bray, E.E.,** MacLean, E.L., & Johnston, A.M. (2020). Evidence of win-stay-lose-shift in puppies and adult dogs. *Proceedings of the Cognitive Science Society*.

Bray, E.E., Levy, K.M., Kennedy, B.S., Duffy, D.L., Serpell, J.A., & MacLean, E.L. (2019). Predictive models of assistance dog training outcomes using the Canine Behavioral Assessment and Research Questionnaire and a standardized temperament evaluation. *Frontiers in Veterinary Science*. 6:49. doi: 10.3389/fvets.2019.00049.

Bray, E.E., Sammel, M.D., Cheney, D.L., Serpell, J.A., and Seyfarth, R.M. (2017). The effects of maternal investment, temperament, and cognition on guide dog success. *Proceedings of the National Academy of Sciences of the United States of America*, 114(34), 9128-9133. doi:10.1073/pnas.1704303114.

Bray, E.E., Sammel, M.D., Seyfarth, R.M., Serpell, J.A., and Cheney, D.L. (2017). Temperament and problem solving in a population of adolescent guide dogs. *Animal Cognition*, 20(5), 923-939. doi: 10.1007/s10071-017-1112-8.

Bray, E. E., Sammel, M.D., Cheney, D.L., Serpell, J.A., and Seyfarth, R.M. (2017). Characterizing early maternal style in a population of guide dogs. *Frontiers in Psychology*, 8, 175. doi: 10.3389/fpsyg.2017.00175.

Bray, E. E., MacLean, E. L., & Hare, B. A. (2015). Increasing arousal enhances inhibitory control in calm but not excitable dogs. *Animal Cognition*, 18(6), 1317-1329. doi: 10.1007/s10071-015-0901-1.

MacLean, E. L., Hare, B., Nunn, C. L., Addessi, E., Amici, F., Anderson, R. C., Aureli, F., Baker, J. M., Bania, A. E., Barnard, A. M., Boogert, N. J., Brannon, E. M., **Bray, E. E.,** Bray J., Brent, L. J. N., Burkart, J. M., Call J., Cantlon, J.F., Cheke, L. G., Clayton, N. S., Delgado, M. M., DiVincenti, L. J., Fujita, K., Herrmann, E., Hiramatsu, C., Jacobs, L. F., Jordan, K. E., Laude, J. R., Leimgruber, K. L., Messer, E. J. E., Moura, A. C. de A., Ostojic, L., Picard, A., Platt, M. L., Plotnik, J. M., Range, F., Reader, S. M., Reddy, R. B., Sandel, A. A., Santos, L. R., Schumann, K., Seed, A. M., Sewall, K. B., Shaw, R. C., Slocombe, K. E., Su, Y., Takimoto, A., Tan, J., Tao, R., van Schaik, C. P., Virányi, Z., Visalberghi, E., Wade, J. C., Watanabe, A., Widness, J., Young, J. K., Zentall, T. R., & Zhao, Y. (2014). The Evolution of Self-Control. *Proceedings of the National Academy of Sciences of the United States of America*, 111(20), E2140-E2148. doi: 10.1073/pnas.1323533111.

Bray, E. E., MacLean, E. L., & Hare, B. A. (2014). Context specificity of inhibitory control in dogs. *Animal Cognition*, 17(1), 15-31. doi: 10.1007/s10071-013-0633-z.

MANUSCRIPTS IN PREPARATION

Bray, E.E., Gruen, M.E., Gnanadesikan, G.E., Horschler, D.J., Levy, K.M., Kennedy, B.S., Hare, B.A., & MacLean, E.L. (submitted). Dog cognitive development: a longitudinal study across the first two years of life.

Bray, E.E., Otto, C.M., Udell, M.A.R., Hall, N.J., Johnston, A.M., & MacLean, E.L. (in prep). Enhancing the selection and performance of working dogs.

PRESENTATIONS

Bray, E.E. & MacLean, E.L. (2020 July). Early ontogeny of social cognition in domestic dogs. Animal Behavior Society 2020 Virtual Conference.

Bray, E.E., Gnanadesikan, G.E., Horschler, D.J., & MacLean, E.L. (2020 Feb). Early development and longitudinal stability of cognitive traits in working dogs. East Coast Canine Cognition Workshop, Yale University, New Haven, Connecticut.

Byrne, M., **Bray, E.E.,** MacLean, E.L., & Johnston, A.M. (2020 Feb). Evidence for win-stay-lose-shift in puppies and adult dogs. East Coast Canine Cognition Workshop, Yale University, New Haven, Connecticut.

Horschler, D.J., **Bray, E.E.,** & MacLean, E.L. (2020 Feb). Do dogs re-engage humans when joint experiences end? East Coast Canine Cognition Workshop, Yale University, New Haven, Connecticut.

MacLean, E.L., Gnanadesikan, G., **Bray, E.E.,** & Snyder-Mackler, N. (2020 Jan). Dog diversity as a natural experiment in cognitive evolution. The Society for Integrative & Comparative Biology Annual Meeting, Austin, Texas.

MacLean, E.L., **Bray, E.E.,** Gnanadesikan, G.E., & Horschler, D.J. (2019 Oct). Ontogeny and heritability of cognitive and temperamental traits in an assistance dog population. International Canine Science Conference, Tempe, Arizona.

Bray, E.E., Gnanadesikan, G., Horschler, D., & MacLean, E. (2019 April). Early emerging cognition in 9-week-old puppies. The 26th International Conference On Comparative Cognition, Melbourne Beach, Florida.

MacLean, E., **Bray, E.E.,** Gnanadesikan, G., & Horschler, D. (2019 April). Heritability of Cognitive Traits in a Pedigreed Dog Population. The 26th International Conference On Comparative Cognition, Melbourne Beach, Florida.

- Bray, E.E.** (2018 Nov). How mothers matter: The impact of maternal style on later behavior and outcome in assistance dogs. East Coast Canine Cognition Workshop, Yale University, New Haven, Connecticut.
- Bray, E.E.,** Sammel, M., Cheney, D., Serpell, J., & Seyfarth, R. (2017 Oct). The effects of maternal investment, temperament, & cognition on guide dog success. International Canine Science Conference, Tempe, Arizona.
- Bray, E.E.,** Sammel, M., Cheney, D., Serpell, J., & Seyfarth, R. (2017 June). Puppies that succeed as guide dogs get tough love. 54th Annual Conference of the Animal Behavior Society, Toronto, Ontario.
- Bray, E.E.,** Sammel, M., Cheney, D., Serpell, J., & Seyfarth, R. (2016 Aug). Cognitive and temperament predictors of guide dog success. 53rd Annual Conference of the Animal Behavior Society, Columbia, Missouri.
- Bray, E.E.** (2014 Aug). The effect of arousal on inhibitory control in dogs. 51st Annual Conference of the Animal Behavior Society, Princeton, New Jersey.
- Bray, E.E.** (2013 Aug). Dogs as a model system for understanding the effect of arousal on inhibitory control. University of Pennsylvania, 699 presentations to the Department of Psychology. Philadelphia, Pennsylvania.
- Bray, E.E.** (2012 Sept). What are the factors affecting inhibitory control in dogs? IGERT Common Ground Seminar. Philadelphia, Pennsylvania.
- Bray, E.E.,** MacLean, E.L., & Hare, B.A. (2012 April). Factors Affecting Inhibitory Control in Dogs. 7th Annual ACC Meeting of the Minds Conference, Blacksburg, Virginia.

POSTERS

- Byrne, M., **Bray, E.E.,** MacLean, E.L., & Johnston, A.M. (2020). Evidence for win-stay-lose-shift in puppies and adult dogs. Poster presented at the 42nd Annual Meeting of the Cognitive Science Society, Virtual.
- Kennedy, B.S., Levy, K.M., **Bray, E.E.,** & MacLean, E.L. (2019 September). Maternal style: How early experiences are associated with future outcomes of assistance dogs. Poster presented at 11th International Working Dog Conference, Stockholm, Sweden.
- Humphrey, E., **Bray, E.,** & Crocker, D. (2019 April). Cortisol and its tie to behavior in service dogs. Poster presented at Sonoma State University Science Symposium: Science, Technology, and Environmental Inquiry, Rohnert Park, California.
- Seely, A., **Bray, E.,** & Seyfarth, R. (2014 September). Flexible Attention in Seeing Eye® Puppies. Poster presented at Center for Undergraduate Research & Fellowships Open House and Research Expo, Philadelphia, Pennsylvania.
- MacLean, E.L., Rainey, C., **Bray, E.,** Duffy, K., & Hare, B. (2012 July). Cognitive & Temperamental Traits of Successful Assistance Dogs. Poster presented at 21st Annual Conference of the International Society of Anthrozoology, Cambridge, United Kingdom.
- Bray, E.E.,** MacLean, E.L., & Hare, B.A. (2012 June). Factors Affecting Inhibitory Control in Dogs. Poster presented at 49th Annual Conference of the Animal Behavior Society, Albuquerque, New Mexico.
- Bray, E.E.,** MacLean, E.L., & Hare, B.A. (2012 April). Factors Affecting Inhibitory Control in Dogs. Poster presented at Duke's Visible Thinking Day, Durham, North Carolina.
- Bray, E.E.** (2011 April). Recommendations for an English Language Learner Literacy Intervention in Durham Public Schools for Communities in Schools of Durham. Poster presented at Duke School Research Partnership End-of-Semester gathering poster presentation. Durham, North Carolina.

INVITED TALKS

Wallis Annenberg PetSpace Leadership Institute Retreat, Wallis Annenberg PetSpace, 2020
Duke University, Duke Canine Cognition Center, 1st Annual Darwin Dogs Day, 2019
Evolutionary Anthropology Talk Series, Duke University, 2019
Breeder Caretaker Seminar, Canine Companions for Independence, 2018
TEAM Volunteer Leadership Conference, Canine Companions for Independence, 2018
Canine Companions for Independence, 2018
Canine Science Symposium, San Francisco SPCA, 2018
National Board meeting reception, Canine Companions for Independence, 2017
The Seeing Eye, 2017
University of Exeter, Centre for Research in Animal Behaviour, 2016
The Seeing Eye, 2015
University of Veterinary Medicine Vienna, Messerli Research Institute, Clever Dog Lab, 2013
Eötvös University Department of Ethology, 2013

RESEARCH GRANTS: CURRENT SUPPORT

Office of Naval Research—Postdoctoral Scholar/Key Personnel: Bray	2020-2023
Developmental and Genetic Influences on Working Dog Cognition (\$303,293)	
AKC Canine Health Foundation—PIs: Bray & MacLean (\$105,949)	2018-2020
The Effects of Early Life Experience on Working Dog Temperament and Cognition	

RESEARCH GRANTS: PREVIOUS SUPPORT

Office of Naval Research—Postdoctoral Scholar/Key Personnel: Bray (\$451,920)	2017-2019
Ontogeny and Heritability of Cognitive and Behavioral Traits Linked to Military Working Dog Success	
National Science Foundation Graduate Research Fellowship (\$32,000 per year)	2013 - 2016
Benjamin Franklin Fellowship, University of Pennsylvania	2012 - 2013, 2016 - 2017

HONORS AND AWARDS

Wallis Annenberg PetSpace Leadership Institute Fellow, Class of 2020	2020
McDonogh School Young Alumni Award Recipient	2019
University of Arizona Sursum Fellow: Postdoctoral Research Development Grant (\$1,083)	2018-2019
School of Arts & Sciences Dean's Travel Subvention (\$500)	Spring 2017
Norman Anderson Graduate Student Fund, Dept. of Psychology (\$2,490)	Winter 2017
School of Arts & Sciences Dean's Travel Subvention (\$500)	Summer 2016
Norman Anderson Graduate Student Fund, Dept. of Psychology (\$3,000)	Summer 2015
School of Arts & Sciences Dean's Travel Subvention (\$300)	Summer 2014
Norman Anderson Graduate Student Fund, Dept. of Psychology (\$2,750)	Summer 2014
Teece Fellowship, University of Pennsylvania (\$2,000)	Summer 2013
Phi Beta Kappa, Duke University	Spring 2013
Karl E. Zener Award for Outstanding Performance in Psychology	Spring 2012
Faculty Scholar Award Nominee, Duke University	Fall 2011
Undergraduate Research Support Office Independent Study Grant (\$400)	Fall 2011
Vertical Integration Program in Psychology Stipend (\$3,000)	Summer 2011
Student Marshal	Spring 2011
Winfred Quinton Holton Prize for Innovative Work in the Field of Education	Spring 2011
Duke Dean's List with Distinction	Fall 2008, Fall 2009, Spring 2011, Fall 2011
Duke Dean's List	Spring 2009, Spring 2010
Psi Chi Honor Society Inductee	Spring 2010

RESEARCH EXPERIENCE

Canine Companions for Independence, Santa Rosa, CA <i>Project coordinator, researcher, on-site supervisor</i>	2017 - present
The Seeing Eye, Inc., Morristown, NJ <i>Project coordinator and researcher</i>	2014 - 2016

Michigan State University Masai Mara Spotted Hyena Project, Kenya <i>Researcher</i>	Summer 2013
Canine Companions for Independence, Santa Rosa, CA <i>Project Co-Manager, Associate in Research in Evolutionary Anthropology</i>	July 2012
K2 Solutions, Pinehurst, NC <i>Associate in Research in Evolutionary Anthropology</i>	June 2012
Canine Companions for Independence, Santa Rosa, CA <i>Undergraduate researcher</i>	August 2011
Duke University, Vertical Integration Program, Durham, NC <i>Undergraduate researcher</i>	Summer 2011
Duke University, School Research Partnership Office, Durham, NC <i>Independent study student</i>	Spring 2011
Duke University, Duke Canine Cognition Center, Durham, NC <i>Undergraduate researcher and thesis student</i>	2010 - 2012

TEACHING AND MENTORING EXPERIENCE

Sonoma State University Research Internship with Canine Companions for Independence: Theresa Hatcher <i>Mentor and on-site supervisor</i>	Spring 2020
Duke Reader Project <i>Duke Community Reader for BIO 329L: Principles of Animal Physiology</i>	Spring 2020
Sonoma State University Research Internship with Canine Companions for Independence: Kyla Guinon, Erin Hardin, and Emily Humphrey <i>Mentor and on-site supervisor</i>	Spring 2019
Princeton University honors thesis: Camden Olson <i>Mentor and summer supervisor</i>	2018
Sonoma State University Research Internship with Canine Companions for Independence: Alexzia Clark, Emily Humphrey, Facundo Ortega, and Camila Risueno-Pena <i>Mentor and on-site supervisor</i>	Fall 2018
Sonoma State University Research Internship with Canine Companions for Independence: Alexzia Clark, Emily Humphrey, and Amber Robello <i>Mentor and on-site supervisor</i>	Spring 2018
Duke Reader Project <i>Duke Community Reader for Psy 301: Research Methods</i>	Spring 2017
University of Pennsylvania honors theses: Sarah Frommer & Molly Ream <i>Graduate Student Mentor</i>	2015 - 2016
Swarthmore College independent research project: Leonie Cohen <i>Graduate Student Mentor</i>	Spring 2015
Robert J. Holtz Endowed Fund for Undergraduate Research: Ashleigh Seely <i>Graduate Student Mentor</i>	Summer 2014
The Graduate School Mentoring Initiative <i>Graduate Student Mentor</i>	2014 - 2015
Animal Behavior, Dr. Seyfarth and Cheney, University of Pennsylvania <i>Teaching Assistant</i>	Fall 2013 & 2014
The Penn Mentoring Program <i>Graduate Student Mentor</i>	2013 - 2014
Thompson Writing Program: The Writing Studio, Durham, NC <i>Undergraduate Writing Tutor</i>	2010 - 2012
Partners for Success, Durham, NC <i>Tutor</i>	Fall 2011
The Duke School, Durham, NC <i>Student Observer for Psy 183B: Child Observation</i>	Spring 2011
Partners for Youth, Durham, NC <i>Tutor</i>	2008 - 2009

PROFESSIONAL SERVICE AND AFFILIATIONS

Grant reviewer	
University of Arizona Postdoctoral Research Development grants	2020
Animal Behaviour Society student research grants	2019
Ad Hoc reviewer	2014 - Present
<i>Animal Behaviour, Animal Cognition, Behaviour, Behavioural Processes, Journal of Applied Animal Welfare Science, Journal of Comparative Psychology, Journal of Ethology, Journal of Veterinary Behavior: Clinical Applications and Research, Learning & Behavior, PLOS One, Scientific Reports, Veterinary Record</i>	
Organized "Topics in Animal Behavior" graduate seminar, University of Pennsylvania	Spring 2014, 2015, 2016
Member	
Animal Behaviour Society	2012 - Present
The International Society of Anthrozoology	2017 - Present

PUBLIC SCIENTIFIC ENGAGEMENT

"Join Canine Companions postdoctoral research associate Dr. Emily Bray."	
Canine Companions for Independence, Facebook Live event. https://bit.ly/2yIlyMV	May 2020
"How Mothers Matter: The Influence of Early Maternal Interaction on Offspring Behavior and Development."	
Continuing Education event presented as part of the 2019 VetVine Webinar Series, sponsored by AKC Canine Health Foundation. http://bit.ly/2QscPDb	May 2019
"What dogs teach us about parenting."	
Top of Mind with Julie Rose, BYU Radio. https://bit.ly/2eMvETc	Sept 2017
"Guide Dog Success."	
AAAS Science Update. http://bit.ly/2uQpa8n	Aug 2017
"Coddled puppies make poor guide dogs, study suggests."	
All Things Considered, National Public Radio. http://n.pr/2uA1vrS	Aug 2017
"Puppies that get tough love succeed as guide dogs."	
Quirks and Quarks, CBC Radio. http://bit.ly/2i7oTMC	Aug 2017

COMMUNITY OUTREACH

Hunter College, Psychology department	April 2020
- Presented about research methods during a virtual guest lecture to the Field Studies in Animal Behavior: Dog Cognition and Behavior course.	
American Association of University Women (AAUW) Girls in Engineering, Math, and Science (GEMS)	Jan 2019
- Presented my research to and participated in a panel discussion for the local AAUW GEMS group during their tour of Canine Companions for Independence.	
Penn Alexander School	March 2017
- Presented my research to the 3 rd grade as part of their "Women in Science" unit.	
Ashley Park Pre K-8 School	January 2014
- Presented my work on impulse control in service dogs to a 2 nd grade class.	
Central Park School for Children, Durham, NC	August 2012
- Presented my service dog research to a 1 st grade class in an interactive setting.	
North Carolina Museum of Natural Sciences, Raleigh, NC	August 2012
- Played interactive cognition games with attendees of a bonobo conservation talk.	
Duke Canine Cognition Center, Durham, NC	March 2012
- Presented our dog research as part of the Pathways Health Careers Enrichment Program.	