

Curriculum Vitae

CLAUDIO CANTALUPO

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Fields of Specialization

Biopsychology, Experimental Neuropsychology, Comparative Psychology.

Areas of Special Interest

- Evolution of laterality and cerebral asymmetry in vertebrates.
- Neuroanatomical substrates of vocal and gestural communication in nonhuman primates.
- Functional correlates of neuroanatomical asymmetry of language-area homologs in nonhuman primates.
- Implementation of structural magnetic resonance imaging (MRI) and Transcranial Magnetic Stimulation (TMS) techniques with primates.
- Development of laterality measures as predictors of cognitive performance in applied settings.
- Implementation of portable, non-invasive measures of cerebral activity with human subjects.

Education

- 2000 Ph.D. in Experimental Psychology (specialty area: Biopsychology) University of Memphis, Memphis, TN.
- 1998 M.S. degree in General Psychology, University of Memphis, Memphis, TN.
- 1994-1995 Internship in Experimental Psychology, University of Padua, Italy.
- 1994 B.S. degree Summa cum Laude in Experimental Psychology, University of Padua, Italy.

Professional Experience

- 2010-present Associate Professor at the department of Psychology at Clemson University, Clemson, SC, Research Associate at the Yerkes National Primate Research Center of Emory University, Atlanta, GA and at the Language Research Center of Georgia State University, Atlanta, GA.
- 2005-2010 Assistant Professor at the department of Psychology at Clemson University, Clemson, SC, Research Associate at the Yerkes National Primate Research Center of Emory University, Atlanta, GA and at the Language Research Center of Georgia State University, Atlanta, GA.
- 2001-2004 Research Associate at the Language Research Center of Georgia State University, Atlanta, GA, Visiting Lecturer at the Psychology Department of Georgia State University, Atlanta, GA, and Post-Doctoral Fellow at the Yerkes National Primate Research Center of Emory University, Atlanta, GA.
- 1997-2000 Research Assistant and Teaching Assistant (Advanced Statistics, Research Design & Methodology) at the Department of Psychology, University of Memphis, Memphis, TN.
- 1995-1996 Graduate Assistant, Office of the Dean of the College of Arts and Sciences, University of Memphis, Memphis, TN.
- 1994-1995 Research Assistant at the Department of Psychology, University of Padua, Italy.

Related Professional Experience

- Grant reviewer for the *National Science Foundation*
- Grant reviewer for the *Italian Bureau of Education, University and Research*.
- Selected Reviewer for the Following Scientific Journals:
 - Psychological Science*
 - The Journal of Neuroscience*
 - Behavioral Neuroscience*
 - NeuroImage*
 - Cerebral Cortex*
 - Brain Research*
 - Physiology and Behavior*
 - Behavioural & Brain Research*
 - Animal Behaviour*
 - Journal of Comparative Psychology*
 - American Journal of Physical Anthropology*
 - American Journal of Primatology*
 - Laterality*
 - Behaviour*
 - Animal Cognition*
 - International Journal of Primatology*
 - Primates*
 - Behavioural processes*
 - Interaction Studies*
 - New Ideas in Psychology*
- **Computer Programming/technical skills:**
 - Extensive knowledge and practice of object-oriented programming in Pascal and C++.
 - Extensive experience in acquiring and analyzing Magnetic Resonance Imaging (MRI) and Transcranial Magnetic Stimulation (TMS) data in non-human primates.
 - Extensive experience in collecting Transcranial Doppler blood speed velocity in the cerebral arteries in human participants.

Past Service

- Faculty Member of the Grievance Board at Clemson University
- Faculty Senator for the College of Business and Behavioral Sciences at Clemson University.
- Member of the alcohol and other drugs task force at Clemson University.
- Member of the Advisory Committee of the Department of Psychology at Clemson University.
- Faculty Advisor for the Undergraduate Students Psychology Club at Clemson University.

Professional Affiliations

- Society for Neuroscience
- Association for Psychological Science
- American Psychological Association
- The Scientific Research Society
- American Society of Primatologists
- International Society of Primatology
- Southern Society for Philosophy and Psychology

Honors, Awards and Recognitions

1995

- Recipient of a competitive EAP scholarship awarded by the University of California at Berkeley to do graduate coursework at the Department of Psychology.
- Recipient of a competitive scholarship awarded by the University of Padua (Italy) to work as a research scholar at the Department of Psychology at The University of Memphis.

1997

- Recipient of the Roland Frye Award from the Department of Psychology at the University of Memphis for outstanding achievements in research.

1998

- Recipient of The University of Memphis Morton Thesis Award.

2000

- Recipient of a competitive Grant-in-Aid of Research award from the Scientific Research Society (Sigma Xi).
- Recipient of a Phi Kappa Phi scholarship for exceptional academic achievement.

2002

- Recipient of the Brenda A. Milner Award from Division 6 of the American Psychological Association for outstanding published work in the field of Behavioral Neuroscience.

2003

- Recipient of the Richard M. Griffith Award from the Southern Society for Philosophy and Psychology.

2004

- Recipient of an intramural grant from the Research Grant Committee of Clemson University.

2006

- Recipient of an intramural grant from the College of Business and Behavioral Sciences of Clemson University.

2007

- Recipient of the Emerging Scholar Award from the College of Business and Behavioral Sciences of Clemson University.

2008

- Officially granted Permanent Resident Status by the Government of the United States of America on the basis of Outstanding Achievements in Research (*USCIS category E17 – Outstanding Professor or Researcher*).

Publications

- **Research articles**

Cantalupo, C., Bisazza, A., & Vallortigara, G. (1995). Lateralization of predator-evasion response in a teleost fish (*Girardinus falcatus*). *Neuropsychologia*, 33, 1637-1646.

Bisazza, A., Cantalupo, C., & Vallortigara, G. (1996). Lateralization of functions in the brain and behaviour of lower vertebrates: new evidences. *Atti e Memorie dell'Accademia Patavina di Scienze, Lettere ed Arti*, 108, 93-138.

Bisazza, A., Cantalupo, C., & Vallortigara, G. (1996). Lateral asymmetries during escape behavior in a species of teleost fish (*Jenynsia lineata*). *Physiology & Behavior*, 60, 1-5.

Bisazza, A., Cantalupo, C., Robins, A., Rogers, L.J., & Vallortigara, G. (1996). Right-pawedness in toads. *Nature*, 379, 408.

Cantalupo, C., Bisazza, A., & Vallortigara, G. (1996). Lateralization of displays during aggressive and courtship behaviour in the Siamese fighting fish (*Betta splendens*). *Physiology & Behavior*, 60, 249-252.

Bisazza, A., Cantalupo, C., Robins, A., Rogers, L.J., & Vallortigara, G. (1997). Pawedness and motor asymmetries in toads. *Laterality*, 2, 49-64.

Ward, J.P., & Cantalupo, C. (1997). Origins and functions of laterality: Interactions of motoric systems. *Laterality*, 2, 279-303.

Cantalupo, C., & Ward, J.P. (2000). Interaction between lateralized systems: exploring the complexity of laterality. *Brain & Cognition*, 43, 73-78.

Bisazza, A., Cantalupo, C., Capocchiano, M., & Vallortigara, G. (2000). Population lateralization and social behavior: a study with sixteen species of fish. *Laterality*, 5, 269-284.

Cantalupo, C., & Hopkins, W.D. (2001). Asymmetric Broca's area in great apes. *Nature*, 414, 505.

Cantalupo, C., & Ward, J.P. (2002). Function of head-cocking in the small-eared bushbaby (*Otolemur garnettii*). *International Journal of Primatology*, 23, 203-221.

Cantalupo, C., Ward, J.P., & Franceschetti D.R. (2002). Lateralized Reaching as Dynamical Symmetry Breaking in the Bushbaby (Otolemur garnettii): Preliminary Evidence. Brain & Cognition, 48, 297-304.

Hopkins, W.D., Cantalupo, C., Wesley, M.J., Hostetter, A.B., Pilcher, D.L. (2002). Grip morphology and hand use in chimpanzees (Pan troglodytes): evidence of a left hemisphere specialization in motor skill. Journal of Experimental Psychology-General, 131, 412-423.

Hopkins, W.D., & Cantalupo, C. (2003). Does variation in sample size explain individual differences in hand preference of chimpanzees (Pan troglodytes)? An empirical study and reply to Palmer (in press). American Journal of Physical Anthropology, 121, 378-381.

Hopkins, W.D., & Cantalupo, C. (2003). Broca's area, gestural communication, and the emergence of right handedness in chimpanzees. Behavioral and Brain Sciences, 26, 224-225.

Cantalupo, C., Pilcher, D., & Hopkins, W.D. (2003). Are planum temporale and Sylvian fissure asymmetries directly related? An MRI study in great apes. Neuropsychologia, 41, 1975-1981.

Freeman, H., Cantalupo, C., & Hopkins, W.D. (2004). Asymmetries in the Hippocampus and Amygdala of Chimpanzees (Pan troglodytes). Behavioral Neuroscience, 118, 1460-1465.

Hopkins W.D. & Cantalupo, C. (2004). Handedness in chimpanzees is associated with asymmetries of the primary motor cortex but not with homologous language areas. Behavioral Neuroscience, 118, 1176-83

Hopkins, W.D., & Cantalupo, C. (2005) Individual and setting differences in the hand preference of chimpanzees (Pan troglodytes): A critical analysis and some alternative explanations. Laterality, 10, 65-80.

Hopkins, W.D., Cantalupo, C., Freeman H., Russel, J., Kachin, M., & Nelson, E. (2005). Chimpanzees are right-handed when recording bouts of hand use. Laterality, 10, 149-159.

Hopkins, W.D., Russel, J. Freeman, H., Cantalupo, C., Shapiro, S. (2005). Factors influencing the prevalence and handedness for throwing in captive chimpanzees (Pan troglodytes). Journal of Comparative Psychology, 119, 363-370.

Bisazza, A., Dadda, M., Cantalupo, C. (2005). Further evidence for mirror-reversed laterality in lines of fish selected for leftward or rightward turning when facing a predator model. Behavioral Brain Research, 156, 165-171.

Dadda, M., Cantalupo, C., & Hopkins W.D. (2006). Further evidence of an association between handedness and neuroanatomical asymmetries in the primary motor cortex of chimpanzees (Pan troglodytes). Neuropsychologia, 44, 2582-2586.

Tagliabue, J.P., Cantalupo, C., & Hopkins, W.D. (2006). Gesture handedness predicts asymmetry in the chimpanzee inferior frontal gyrus. Neuroreport, 17, 923-927.

Hopkins, W. D., Cantalupo, C., & Tagliatela, J. (2007). Handedness is associated with asymmetries in gyrification of the cerebral cortex of chimpanzees. Cerebral Cortex, *17*, 1750-1756.

Hopkins, W. D., Dunham, L., Cantalupo, C., & Tagliatela, J. T. (2007). The relationship between handedness, brain asymmetries and corpus callosum size in chimpanzees (*Pan troglodytes*). Cerebral Cortex, *17*, 1757-1765.

Hopkins, W. D., Russell, J., & Cantalupo, C. (2007). Neuroanatomical correlates of handedness for tool use in chimpanzees (*Pan troglodytes*): Implication for theories on the evolution of language. Psychological Science, *18*, 971-977.

Hopkins, W. D., & Cantalupo, C. (2008). Theoretical speculations on the evolutionary origins of hemispheric specialization. Current Directions in Psychological Science, *17*, 233-237.

Cantalupo, C., Freeman H., Rodes, W., & Hopkins, W.D. (2008). Handedness for tool use correlates with cerebellar asymmetries in chimpanzees (*Pan troglodytes*). Behavioral Neuroscience, *122*, 191-198.

Cantalupo C., Oliver J., Smith, J., Nir, T., Tagliatela, J., and Hopkins, W.D. (2009). The chimpanzee brain shows human-like perisylvian asymmetries in white matter. European Journal of Neuroscience, *30*, 431-438.

Hopkins, W. D., Lyn, H., & Cantalupo, C. (2009). A Preliminary Study of Volumetric and Lateralized Differences in the Brains of Chimpanzees (*Pan troglodytes*) and Bonobos (*Pan paniscus*). American Journal of Primatology.

Cantalupo, C. & Hopkins, WD (2010). The cerebellum and its contribution to complex tasks in higher primates: a comparative perspective. Cortex, *46*, 821 – 830.

Cantalupo C., (in preparation). Evidence of asymmetry in brain networks described by systems neuroscience research: implications for human-factors research.

Cantalupo C., (in preparation). Lateralized tympanic membrane temperature as a measure of functional hemispheric asymmetry: A review.

Cantalupo C., (in preparation). The use of Transcranial Doppler Sonography in the assessment of Hemispheric asymmetry in normal and clinical populations. A review.

Book chapters

Ward, J.P., & Cantalupo, C. (1997). Origins and functions of laterality: Interactions of motoric systems. In J. Fagot, L. Rogers, J. Ward, B. Bulman-Fleming, & W. Hopkins (Eds.), Hemispheric specialisation in animals and humans (pp. 279-303). Hove (UK): Psychology Press Ltd.

Hopkins, W.D., Pilcher, D.L., & Cantalupo, C. (2003). A Comparative Review of Neuroanatomical Asymmetries in Nonhuman Primates: Implications for the Evolution of

Handedness and Other Functional Asymmetries In: D. Maestriperi (Ed.), Primate Psychology. Cambridge, MA: Harvard University Press.

Hopkins, W.D., & Cantalupo, C. (2010). Left-right spatial discrimination and the evolution of hemispheric specialization: some new thoughts on some old ideas. In: F. Dolins & B. Mitchell (Eds.), Spatial Perception, Spatial Cognition: Mapping the Self and Space. Cambridge, England: Cambridge University Press.

- **Published Abstracts**

Cantalupo, C., Bisazza, A., & Vallortigara, G. (1994). Preliminary evidence of lateral asymmetries in lower vertebrates. Boll. Zool. Suppl., 28.

Cantalupo, C., Ward, J.P., Kelley, S.P., & Keeney, C. (1996). Motoric and sensory lateral biases in the bushbaby (Otolemur garnettii). International Journal of Comparative Psychology, 9, 93.

Cantalupo, C., & Ward, J.P. (1999). Laterality patterns and interactions in the small-eared Bushbaby (Otolemur garnettii). American Journal of Primatology, 49, 40.

Capussotti, N., Cantalupo, C., Giacoma, C. (2001). Laterality in lemurids: Varecia variegata and Lemur catta. Folia Primatologica, 72, 138-139.

Cantalupo, C., Pilcher, D., & Hopkins, W.D. (2001). Are planum temporale and Sylvian fissure asymmetries directly related? A MRI study in great apes. American Journal of Primatology, 54, 106.

- **Other Published Scholarly Contributions**

Cantalupo, C. (2008). Review of the book From monkey brain to human brain. Human Ethology Bulletin, 23, 13-15.

.King, B.M., & Cantalupo, C. (2010). Physiological Psychology. In Weiner, I., & Craighead, E. (Eds.), Corsini Encyclopedia of Psychology and Behavioral Science. Hoboken, NJ: John Wiley & Sons.

Presentations at Professional Conferences/Meetings

Cantalupo, C., & Ward, J.P. (1996, August). Motoric and sensory lateral biases in the bushbaby (Otolemur garnettii). Poster presented at the 8th Biennial Meeting of the International Society for Comparative Psychology, Montreal, Canada.

Cantalupo, C. (1997, April). Lateralization and interaction of motoric systems in the small-eared bushbaby (Otolemur garnettii). Poster presented at the 9th Annual Student Research Forum at The University of Memphis, TN.

Cantalupo, C., & Ward, J.P. (1998, August). Laterality patterns in Otolemur garnettii. Talk given at the 27th Congress of the International Primatological Society, Antananarivo, Madagascar.

Cantalupo, C. (1998, August). The “Zoom-in / Zoom-out” approach on handedness. Talk given at the 27th Congress of the International Primatological Society, Antananarivo, Madagascar.

Hook-Costigan, M.A., Cantalupo, C., & Ward, J.P. (1998, August). Hand preference in the bushbaby (Otolemur garnettii). Talk given at the 27th Congress of the International Primatological Society, Antananarivo, Madagascar.

Rehlander, M., Hook-Costigan, M.A., Cantalupo, C., & Ward, J.P. (1999, April). Chemosensory discrimination of infants by Otolemur garnettii. Poster presented at the 45th Annual Convention of the Southwestern Psychological Association, Albuquerque, New Mexico.

Cantalupo, C., & Ward, J.P. (June, 1999). Interaction between lateralized systems: exploring the complexity of laterality. Poster presented at the 10th Theoretical and Experimental Neuropsychology Meeting (TENNET X), Montreal, Canada.

Cantalupo, C., & Ward, J.P. (August, 1999). Laterality patterns and interactions in the small-eared bushbaby (Otolemur garnettii). Talk given at the 22th Meeting of the American Society of Primatologists, New Orleans, Louisiana.

Hook-Costigan, M.A., Rehlander, M., Cantalupo, C., & Ward, J.P. (August, 1999). Hand preference for visuospatial reaching in the Bushbaby (Otolemur garnettii). Talk given at the 22th Meeting of the American Society of Primatologists, New Orleans, Louisiana.

Cantalupo, C., & Ward, J.P. (October, 1999). Patterns of interaction among lateral biases in the small-eared bushbaby (Otolemur garnettii). Poster presented at the 29th Meeting of the Society for Neuroscience, Miami Beach, Florida.

Rehlander, M., Hook-Costigan, M.A., Cantalupo, C., & Ward, J.P. (2000, April). Spontaneous fishing by infant small-eared bushbabies (Otolemur garnettii). Talk given at the 46th Annual Convention of the Southwestern Psychological Association, Dallas, New Mexico.

Cantalupo, C. (April, 2000). Self-organization and Symmetry Breaking in Dynamical Systems: A New Perspective on Laterality in Action Systems. Invited talk given at the symposium “ Directions of Approach to Laterality: Top-Down or Bottom-Up?” at the 46th Annual Convention of the Southwestern Psychological Association, Dallas, Texas.

Franceschetti, D.R., & Cantalupo, C. (2000, November). Dynamical field model of hand preference. Talk given at the Southeastern Section Meeting of the American Physical Society, Starkville, Mississippi.

Franceschetti, D.R., & Cantalupo, C. (2000, November). Application of dynamical system theory to hand preference in the bushbaby (Otolemur garnettii). Poster presented at the 30th Meeting of the Society for Neuroscience, New Orleans, Louisiana.

Cantalupo, C., Franceschetti, D.R., & Ward, J.P. (2000, November). A new paradigm for assessing handedness stability in the bushbaby (Otolemur garnettii). Poster presented at the 30th Meeting of the Society for Neuroscience, New Orleans, Louisiana.

Cantalupo, C., Ward J.P., & Franceschetti, D.R., (2001, June). Lateralized Reaching as Dynamical Symmetry Breaking in the Bushbaby (Otolemur garnettii): Preliminary Evidence. Poster presented at the 12th Theoretical and Experimental Neuropsychology Meeting (TENNET XII), Montreal, Canada.

Cantalupo, C., Pilcher, D., & Hopkins, W.D. (2001, August). Are planum temporale and Sylvian fissure asymmetries directly related? A MRI study in great apes. Talk given at the 24th Meeting of the American Society of Primatologists, Savannah, Georgia.

Cantalupo, C. (2001, November). Asymmetry of Broca's area in great apes. Invited talk given at the Department of Psychology at Emory University, Atlanta, Georgia.

Cantalupo, C. (2002, March). Evolution of Broca's area: asymmetry of Brodmann's area 44 in great apes. Talk given at the 94th meeting of the Southern Society for Philosophy and Psychology, Nashville, Tennessee.

Cantalupo, C., Gullledge, J.P., Washburn D.A., & Hopkins, W.D. (2002, November). Implementation of transcranial magnetic stimulation in motor and cognitive tasks with a non-human primate (Macaca mulatta): Preliminary Evidence. Poster presented at the 43rd meeting of the Psychonomic Society, Kansas City, Missouri.

Cantalupo, C., Gullledge, J.P., Washburn D.A., & Hopkins, W.D. (2002, November). Computer-driven transcranial magnetic stimulation in a non-human primate (Macaca mulatta). Poster presented at the 32nd meeting of the Society for Computers in Psychology, Kansas City, Missouri.

Cantalupo, C. (2003, April). Implementation of transcranial magnetic stimulation in computerized tasks with a non-human primate (Macaca mulatta). Talk given at the 95th meeting of the Southern Society for Philosophy and Psychology, Atlanta, Georgia.

Cantalupo, C. (2003, June). Fish, Toads, and Primates: Climbing the Evolutionary Ladder in Pursuit of Asymmetry in Behavior and Brain. Invited talk given at the Montreal Neurological Institute of McGill University, Quebec, Canada.

Cantalupo, C. (2004, March). Structural and functional aspects of cerebral asymmetry in chimpanzees. Invited talk given at the Psychology Department of the University of Houston, Texas.

Hopkins, W.D., & Cantalupo, C. (2004, March). Neurobiological Correlates of Hand Use for Gesture in Chimpanzees: Some Preliminary Observations. Invited Talk at the Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany.

Cantalupo, C., & Hopkins, W.D. (2004, April). Behavioral correlates of cerebral asymmetries in great apes. Talk given at the 96th meeting of the Southern Society for Philosophy and Psychology, New Orleans, Louisiana.

Cantalupo, C., Rodes, W., Hegarty, J., Freeman, H., & Hopkins, W.D. (2005, November). Morphological variability of the frontal operculum in the great ape brain: a source of information for the study of the asymmetry of language areas. Poster presented at the 35th Meeting of the Society for Neuroscience, Washington, DC.

Cantalupo C., Swavely, N.S., Hegarty, J., and Hopkins, W.D. (2006, October). Asymmetry of the insular cortex in the chimpanzee: a volumetric study. Poster presented at the 36th Meeting of the Society for Neuroscience in Atlanta, GA.

Cantalupo C., Rodes, W., and Hopkins, W.D. (2007, November). Handedness for tool use correlates with cerebellar asymmetries in chimpanzees (*Pan troglodytes*). Poster presented at the 37th Meeting of the Society for Neuroscience in San Diego, CA.

Cantalupo C. & Hopkins, W.D. (2008, July) Brain Asymmetry in Chimpanzees (*Pan troglodytes*): an Overview of MRI and Behavioral Evidence. Invited Plenary Session Talk Presented at the 19th Meeting of the International Society for Human Ethology in Bologna, Italy.

Cantalupo C., Oliver, J., Smith, J., Nir, T., Tagliabattola, J., and Hopkins, W.D. (2008, November). Perisylvian Asymmetries of the Chimpanzee Brain: Behavioral and Neuroanatomical Correlates. Poster presented at the 38th Meeting of the Society for Neuroscience in Washington, DC.

Cantalupo C., Braly N., Bennett A., Hughes B., Russell J., and Hopkins, W.D. (2009, November). Functional Correlates of Asymmetry of the Insular Cortex in the Chimpanzee. Poster presented at the 39th Meeting of the Society for Neuroscience in Chicago, IL.

Cantalupo C. and Hopkins, W.D. (2010, November). Factors affecting the macroscopic asymmetry of the frontal operculum in the chimpanzee brain: Role of white-gray matter volumes and their relationship to handedness. Poster accepted at the 40th Meeting of the Society for Neuroscience in San Diego, CA.

Cantalupo C. and Hopkins, W.D. (2012, October). Asymmetry of insular grey matter in the chimpanzee brain and autonomic behavioral correlates. Poster accepted at the 42nd Meeting of the Society for Neuroscience in San Diego, CA.

C. Cantalupo, J. Patterson, W.D. Hopkins (2016, May). Asymmetry of Fronto-Insular Cortex Predicts Prosocial Personality Traits in the Chimpanzee (*Pan troglodytes*). Poster accepted for presentation at the 28th APS Annual Convention in Chicago, IL.

Past Grant Submissions

2013 Simons Foundation SFARI grant proposal, PI, 100% effort, \$250,000 requested.

2013 NSF IOS/Neural Systems/Modulation preproposal, PI, 100% effort, \$500,000 requested.