

Madhur Mangalam

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EDUCATION

UNIVERSITY OF GEORGIA | PH.D. CANDIDATE
BEHAVIOR AND BRAIN SCIENCES PROGRAM, DEPARTMENT OF PSYCHOLOGY
August 2014 – Present | Athens, GA
w/ Prof. Dorothy M. Fragaszy, Prof. Karl M. Newell, & Prof. Dean Sabatinelli

UNIVERSITY OF MYSORE | RESEARCH ASSISTANT
DEPARTMENT OF PSYCHOLOGY
July 2012 – July 2014 | Mysore, KA, India
w/ Prof. Mewa Singh

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE | DUAL DEGREE B.S.–M.S.
LIFE SCIENCES
August 2007 – May 2012 | Pune, MH, India
w/ Prof. Mewa Singh

RESEARCH INTERESTS

Biomechanics | Human Factors & Tool Use | Motor Control | Perception & Action | Perceptuomotor Embodiment

PEER-REVIEWED PUBLICATIONS*

*Names of undergraduate mentees are underlined>.

Mangalam, M., Conners, J. D., & Singh, T. Differential informational support for haptics for action and haptics for perception. (In preparation).

Mangalam, M., Rein, R., & Fragaszy, D. M. Joint synergies and skill in nut-cracking in wild monkeys. (In preparation).

Mangalam, M., Pacheco, M. M., Fragaszy, D. M., & Newell, K. M. Perceptual learning of the affordances of a jointed tool. (In preparation).

Mangalam, M., Roles, L. K. R., & Fragaszy, D. M. Shared and distinct perceptuomotor control of stone hammers in humans and wild monkeys. (In preparation).

Mangalam, M. & Fragaszy, D. M. Reply to “Tool use and dexterity: Beyond the embodied theory.” (In preparation).

Mangalam, M., Rein, R., & Fragaszy, D. M. Wild monkeys structure motor variability to maintain a stable bipedal stance while using stone hammers. (In preparation).

Mangalam, M., Conners, J. D., Fragaszy, D. M., & Newell, K. M. Location of the effector on a grasped object influences haptic perception of the length of that object. (Under review).

Fragaszy D. M. & **Mangalam, M.** (2018). Tooling. *Advances in the Study of Behavior* 50, 000–000.

Mangalam, M., Wagman, J. B., & Newell, K. M. (2018). Temperature influences perception of the length of a grasped object via effortful touch. *Experimental Brain Research* 236(2), 505–516.

Mangalam, M., Pacheco, M. M., Izar, P., Visalberghi, E., & Fragaszy, D. M. (2018). Unique perceptuomotor control of stone hammers in wild monkeys. *Biology Letters* 20170587.

Mangalam, M., Barton, S. A., Wagman, J. B., Fragaszy, D. M., & Newell, K. M. (2017). Length of an object perceived through dynamic touch remains invariant across changes in the medium. *Attention, Perception, & Psychophysics* 79(8), 2499–2509.

Mangalam, M., Newell, K. M., Visalberghi, E., & Fragaszy, D. M. (2017). Stone-tool use in wild monkeys: Implications for the study of the body-plus-tool system. *Ecological Psychology* 29(4), 300–316.

Mangalam, M. (2016). What makes a tool. In Shackelford, T. K. & Weekes-Shackelford, V. A. (Eds.), *Encyclopaedia of Evolutionary Psychological Science* (pp. 1–5). New York, NY: Springer.

Mangalam, M. & Frigaszy, D. M. (2016). Transforming the body-only system into the body-plus-tool system. *Animal Behaviour* 117, 115–22.

Mangalam, M., Desai, N., & Singh, M. (2016). Division of labor in hand usage: A democratic approach to explaining manual asymmetries in non-human primates. *Current Science* 110(9), 1630–1638.

Karve, S. M. & **Mangalam, M.** (2016). Junior researchers: Hasty publication compromises rigour. *Nature* 531(7594), 305.

Mangalam, M., Izar, P., Visalberghi, E., & Frigaszy, D. M. (2016). Task-specific temporal organization of percussive movements in wild bearded capuchin monkeys. *Animal Behaviour* 114, 129–137.

Featured in:

Animal Behaviour On tool use, and becoming human

Journal of Experimental Biology Monkeys alter tool use for different tasks

Classen, D., Kiessling, S. E., **Mangalam, M.,** Kaumanns, W., & Singh, M. (2016). Fission-fusion species under restricted housing conditions: A comparative study of inter-individual interactions and physical proximity in captive bonobos and Bornean orangutans. *Current Science* 110, 139–150. *Cover Page Article

Mangalam, M., Desai, N., & Singh, M. (2016). Self-organization of laterally asymmetric movements as a consequence of space-time optimization. *Journal of Theoretical Biology* 390, 50–60.

Zaunmair, P., **Mangalam, M.,** Kaumanns, W., Singh, M., & Slotta-Bachmayr, L. (2015). Patterns of dominance relationships among the females of a captive female-only group of lion-tailed macaques (*Macaca silenus*) during the course of the introduction of a new adult male. *Current Science* 109(4), 803–807.

Featured in:

Current Science Society of lion-tailed macaques

Mangalam, M. & Frigaszy, D. M. (2015). Quantifying affordances. In Weast-Knapp, J., Malone, M., & Abney, D. (Eds.), *Studies in Perception and Action XIII* (pp. 199–202). New York, NY: Psychology Press.

Mangalam, M. & Karve, S. M. (2015). Comment on “Number-space mapping in the newborn chick resembles humans’ mental number line.” *Science* 348(6242), 1438–b.

Mangalam, M. & Frigaszy, D. M. (2015). Wild bearded capuchin monkeys crack nuts dexterously. *Current Biology* 25(10), 1334–1339.

Featured in:

BBC Radio Monkey nuts

Daily Mail This is how you should be cracking nuts!

Der Spiegel Raffinierte technik: So knacken affen nüsse

Discovery News Monkeys show how to perfectly crack a nut

EurekaAlert! Wild bearded capuchin monkeys really know how to crack a nut

Huffington Post Clever monkey demonstrates the proper way to crack a nut

Live Science Nut-cracking monkeys show humanlike skills

Mental Floss These monkeys wield makeshift hammers and anvils

National Geographic Nut-bashing monkeys offer window into human evolution

Nature World News These nut cracking monkeys would make great blacksmiths - use a hammer and anvil with deft

New Scientist Capuchin monkeys rival chimps as highly skilled nut-crackers

Pacific Standard Monkeys with talented hands

Science News Rock-wielding monkeys make adjustments when cracking nuts

Science Shot Clever monkeys adjust how hard they hammer nuts

The New York Times Monkeys provide clues to how tool use developed

Mangalam, M., Desai, N., & Singh, M. (2015). Division of labor in hand usage is associated with higher hand performance in free-ranging bonnet macaques, *Macaca radiata*. **PLoS ONE** 10(3), e119337.

Nettimi, R. P., **Mangalam, M., & Singh, M. (2015).** Why not be an early bird researcher? **Current Science** 108(6), 1027–1028.

Featured in:

The Indian Express Education system does not foster the spirit of inquiry

Sfar, N., **Mangalam, M., Kaumanns, W., & Singh, M. (2014).** A comparative assessment of hand preference in captive red howler monkeys, *Alouatta seniculus* and yellow-breasted capuchin monkeys, *Sapajus xanthosternos*. **PLoS ONE** 9(10), e107838.

Mangalam, M., Desai, N., & Singh, M. (2014). Do right-handed monkeys use the right cheek pouch before the left? **PLoS ONE** 9(5), e97971.

Mangalam, M., Desai, N., & Singh, M. (2014). Division of labor in hand usage in free-ranging bonnet macaques, *Macaca radiata*. **American Journal of Primatology** 76(6), 576–585.

Mangalam, M. & Singh, M. (2013). Flexibility in food extraction techniques in urban free-ranging bonnet macaques, *Macaca radiata*. **PLoS ONE** 8(12), e85497.

Mangalam, M. & Singh, M. (2013). Differential foraging strategies: Motivation, perception and implementation in urban free-ranging dogs, *Canis familiaris*. **Animal Behaviour** 85(2), 763–770.

Mangalam, M. & Singh, M. (2013). Sex and reproductive state influence the rate of resource acquisition and monopolisation in urban free-ranging dogs, *Canis familiaris*. **Behaviour** 150(4), 199–213.

Mangalam, M. (2012). Strategies in novel food extraction tasks and responses to perceived threats in urban free-ranging dogs, *Canis familiaris*. **IISER Pune Master's Thesis**.

Das, S., Dutta, S., **Mangalam, M., Verma, R., Rath, S., Singh, M., & Kumara, H. (2011).** Prioritizing remnant forests for the conservation of Mysore slender lorises (*Loris lydekerianus lydekerianus*) in Karnataka, India through estimation of population density. **International Journal of Primatology** 32(5), 1153–1160.

Featured in:

The Hindu Loris clings on precariously here

The Times of India Study moots conservation of slender loris' habitat

RESEARCH FUNDINGS

2017–18 **Committee for Research and Exploration, National Geographic Society | USD 29,226** WW-051R-17
"Nut-cracking in wild bearded capuchin monkeys: Patterns of coordination in movements"
w/ Dorothy M. Fragaszy, Patrícia Izar, & Elisabetta Visalberghi

2016 **Innovative and Interdisciplinary Research Grant | USD 1,000**
Graduate School, University of Georgia

PUBLISHED ABSTRACTS

Mangalam, M. (2018). Haptic perception in motor control, at land, in water, in air, and in space, of a fish's fin, a flamingo's neck, a monkey's tail, a snake's spine, and a bat's wing. **Integrative & Comparative Biology** 58(suppl_1), e000.

Mangalam, M. & Fragaszy, D. M. (2018). Joint synergies in nut cracking in wild bearded capuchin monkeys. **Integrative & Comparative Biology** 58(suppl_1), e000.

Mangalam, M., Matheus, M. M., & Fragaszy, D. M. (2017). How wild bearded capuchin monkeys crack nuts. **Integrative & Comparative Biology** 57(suppl_1), e337.

Mangalam, M., Roles, L. K. R., & Fragaszy, D. M. (2017). Wild bearded capuchin monkeys outperform humans in cracking nuts. **Integrative & Comparative Biology** 57(suppl_1), e104.

Mangalam, M. & Fragaszy, D. M. (2016). Embodied foundations of stone tool use shared by humans and bearded capuchin monkeys. **American Journal of Physical Anthropology** 159(S62), 218.

Mangalam, M. & Fragaszy, D. M. (2015). Wild bearded capuchin monkeys crack nuts dexterously. **Proceedings of the XVIII International Conference on Perception–Action** 86.

ORAL PRESENTATIONS

- 2018 **Society for Integrative & Comparative Biology** San Francisco, CA | Jan 3–7
Haptic perception in motor control, at land, in water, in air, and in space, of a fish's fin, a flamingo's neck, a monkey's tail, a snake's tongue.
- 2017 **American Society for Primatologists** Washington, DC | Aug 25–28
Identifying distinguishing features of perceptuomotor control of stone tools in humans and bearded capuchin monkeys.
- 2017 **7th Annual Graduate Students & Postdocs in Science Day**, University of Georgia, Athens, GA | April 17
Perceptual-motor control of stone tools in wild monkeys: Implications for the origins of stone-tool manufacture in hominins.
- 2017 **40th Annual Psi Chi Convention**, University of Georgia, Athens, GA | April 14
Perceptual-motor control of stone tools in wild monkeys: Implications for the origins of stone-tool manufacture in hominins.
- 2017 **Society for Integrative & Comparative Biology** New Orleans, LA | Jan 4–8
How wild bearded capuchin monkeys crack nuts.
- 2016 **International Society for Ecological Psychology** Clemson, SC | June 20–22
Biomechanical analysis of the affordances of anvil-and-hammer tools in wild bearded capuchin monkeys.
- 2016 **American Association of Physical Anthropologists** Atlanta, GA | April 13–16
Embodied foundations of stone tool use shared by humans and bearded capuchin monkeys.
- 2015 **XVIII International Conference on Perception–Action** Minneapolis, MN | July 14–18
Wild bearded capuchin monkeys crack nuts dexterously.

POSTER PRESENTATIONS

- 2018 **Society for Integrative & Comparative Biology** San Francisco, CA | Jan 3–7
Joint synergies in nut cracking in wild bearded capuchin monkeys.
- 2017 **Society for Integrative & Comparative Biology** New Orleans, LA | Jan 4–8
Wild bearded capuchin monkeys outperform humans in cracking nuts.
- 2016 **International Society for Ecological Psychology** Clemson, SC | June 20–22
Wild bearded capuchin monkeys use their semi-prehensile tail as a cantilever of adjustable length.
- 2015 **XVIII International Conference on Perception–Action** Minneapolis, MN | July 14–18
Quantifying affordances.

PROFESSIONAL MEMBERSHIPS

International Society for Ecological Psychology (ISEP) | Society for Integrative and Comparative Biology (SICB)

AD-HOC REVIEWERSHIPS

Animal Cognition | *Behavioural Processes* | *Behavioural Brain Research* | *Biology Letters* | *Current Science* | *Journal of Biosciences* | *Journal of Comparative Psychology* | *Nature*

AWARDS, FELLOWSHIPS, & GRANTS

- 2018 **Graduate School Travel Grant | USD 775**
Graduate School, University of Georgia
- 2017-18 **Departmental Teaching Assistantship | USD 19,253**
Department of Psychology, University of Georgia
- 2017 **Graduate School Travel Grant | USD 775**
Graduate School, University of Georgia
- 2017 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia
- 2016-17 **Departmental Teaching Assistantship | USD 18,696**
Department of Psychology, University of Georgia
- 2016 **Departmental Teaching Assistantship | USD 2,268**
Department of Psychology, University of Georgia
- 2016 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia
- 2015-16 **Departmental Teaching Assistantship | USD 18,144**
Department of Psychology, University of Georgia
- 2015 **Honorary Domestic Travel Assistance | INR 11,000**
Biopsychology Laboratory, University of Mysore
- 2015 **Foreign Travel Assistance | USD 1,850**
OVPR, University of Georgia
- 2015 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia
- 2015 **Outstanding Publication Award**
Department of Psychology, University of Georgia
- 2014-15 **Ph.D. Scholars of Excellence Assistantship | USD 21,000**
Department of Psychology, University of Georgia
- 2015 **Education Related Travel Grant | INR 40,000**
Sir Dorabji Tata Trust, India
- 2007-12 **Inspire Fellowship | INR 287,500**
Department of Psychology, University of Georgia
- 2010 **Summer Research Fellowship | INR 12,000**
Indian Academy of Sciences, India
- 2010 **Spirit of Invention Award | INR 5,000**
National Chemical Laboratory, India

TEACHING EXPERIENCE

RESEARCH ANALYSIS IN PSYCHOLOGY | TEACHING ASSISTANT
January 2018 – May 2018 | University of Georgia

ANIMAL COGNITION & PERCEPTION | GUEST LECTURER
March 2018 | University of Georgia

SENSATION & PERCEPTION | GUEST LECTURER
October 2017 | University of Georgia

RESEARCH DESIGN IN PSYCHOLOGY | TEACHING ASSISTANT
August 2017 – December 2017 | University of Georgia

COGNITIVE PSYCHOLOGY | TEACHING ASSISTANT
Jan 2017 – May 2017 | University of Georgia

PHYSIOLOGICAL & COMPARATIVE PSYCHOLOGY | TEACHING ASSISTANT

August 2016 – December 2016 | University of Georgia

PSYCHOPHARMACOLOGY | TEACHING ASSISTANT

June 2016 – July 2016 | University of Georgia

ANIMAL COGNITION | GUEST LECTURER

January 2016 – May 2016 | University of Georgia

ELEMENTARY PSYCHOLOGY | TEACHING ASSISTANT

August 2015 – May 2016 | University of Georgia

STATISTICS | GUEST LECTURER

January 2013 – May 2013 | University of Mysore

EVOLUTION | GUEST LECTURER

August 2012 – December 2012 | University of Mysore

UNDERGRADUATE MENTORSHIP

- 2017-18 **James D. Conners**
Psychology & Communications Major, University of Georgia
- 2017 **Carlos R. Corea**
Linguistics & Psychology Major, University of Georgia
- 2017 **Lillian A. Stamps**
Psychology Major, University of Georgia
- 2017 **Tinikki C. Gibbs**
Psychology Major, University of Georgia
- 2016 **Sophie A. Barton**
Psychology & Neuroscience Major, University of Georgia
- 2015-16 **Ashley Myers**
Biology & Psychology Major, University of Georgia
- 2015-16 **Hiba Hafeez**
Psychology Major, University of Georgia
- 2015-16 **Lindsey K. R. Roles**
Psychology & Neuroscience Major, University of Georgia
- 2015 **James Y. Hammers**
Psychology Major, University of Georgia
- 2015 **Leslea G. Motley**
Psychology Major, University of Georgia
- 2012-15 **Ravindra P. Nettimi**
Biology Major, Indian Institute of Science Education and Research Pune
- 2012-15 **Nisarg Desai**
Biology Major, Indian Institute of Science Education and Research Pune

REFEREES

DOROTHY M. FRAGASZY | PROFESSOR

Psychology, University of Georgia
doree@uga.edu | 706.338.3859 | 125 Baldwin St, Athens, GA 30602, USA

KARL M. NEWELL | PROFESSOR

Kinesiology, University of Georgia
kmn1@uga.edu | 814.571.1812 | 110 Carlton St, Athens, GA 30602, USA

DEAN SABATINELLI | ASSOCIATE PROFESSOR

Psychology, University of Georgia
sabat@uga.edu | 706.542.3094 | 125 Baldwin St, Athens, GA 30602, USA

PATRÍCIA IZAR | PROFESSOR

Experimental Psychology, University of São Paulo
patrizar@usp.br | +55 11.091.4358 | Av. Professor Mello Moraes, 1721 Butantã, São Paulo, SP 05508-030, Brazil

MEWA SINGH | LIFE-LONG DISTINGUISHED PROFESSOR

Psychology, University of Mysore
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SUTIRTH DEY | ASSOCIATE PROFESSOR

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