

# Minwoo (Daniel) Lee

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## RESEARCH INTERESTS

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I use **behavioral experiments, neuroimaging techniques, and population genetics methods** to study the evolutionary and proximate basis of human social cognition and behaviors.

My research centers around 1) the **neuropeptide oxytocin** and its association with **prosocial preference** and 2) neural mechanisms that support **social learning in humans**. I am also deeply interested in promoting **mental/physical health** of individuals using concepts and methods in evolutionary biology, anthropology, and social neuroscience.

I am currently working on projects that focus on 1) the neural basis of caregiving, 2) gene-culture coevolution of prosocial norms and the oxytocin receptor gene (*OXTR*), and 3) the role of social support in metabolic functioning in humans. In the long-run, I aim to use my training and knowledge to create a positive cycle of altruism and health among minoritized or marginalized communities.

**Keywords:** prosociality, caregiving, social learning, oxytocin, gene-culture coevolution, fMRI.

## POSITION/AFFILIATION

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2/2023 – Present : Postdoctoral associate, Department of Psychology, Cornell University

5/2022 – 2/2023 : Research associate, Department of Anthropology, Emory University

## EDUCATION

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2022 Ph.D., Anthropology, Emory University (Advisor: James K. Rilling, Ph.D.)

2016 M.S., Behavioral and Cognitive Neuroscience, Korea University (Advisor: Hackjin Kim, Ph.D.)

2013 B.A., Psychology (Summa Cum Laude), Korea University, Seoul, Korea.

## RESEARCH SKILLS

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### - Quantitative/qualitative data analysis tools

- SPSS, JASP and R (General statistical analysis)
- MATLAB, Python and Bash scripting (Neuroimaging data organization and analysis).
- MAXQDA (Qualitative data analysis)
- Net-Logo and E-Net (Evolutionary modeling and social network analysis)

### - Neuroimaging data analysis & acquisition software

- FSL, SPM, and ANTs (Anatomical and functional MRI data analysis)
- Brainsight (Transcranial magnetic stimulation)

## PUBLICATIONS

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### Peer-reviewed Journal Articles:

1. Rilling, JK., **Lee, M.**, Mclsaac, J., Gallagher, P., Kim, J., Zhou, C., McDade, TW., Hepburn, K., & Perkins, M. (2024). Evaluation of photo captioning cognitive empathy intervention for dementia caregivers. *Clinical Gerontologist*, 1-14.
2. Joseph, SK., Wagman, E., Diab, N., Ryu, N., **Lee, M.**, Haas, R., Rilling, JK., Aldenderfer, MS., & Lindo, J. (2024). Paleogenomic insights into cooperation in the ancient Andes from positive selection on oxytocin pathway genes. *Genes, Brain, and Behavior*. <https://doi.org/10.1111/gbb.12877>.
3. Rilling, JK., Gallagher, P., & **Lee, M.** (2024). Mating-related stimuli induce rapid shifts in fathers' assessments of infants, *Evolution and Human Behavior*, 45(1), 13-19.
4. **Lee, M.**, Lori, A., Langford, N., & Rilling, JK. (2023). The neural basis of smile authenticity judgments and the potential modulatory role of the oxytocin receptor gene (*OXTR*), *Behavioural Brain Research*, 437, 114144.
5. Rahman, B., **Lee, M.**, & Rilling, JK. (2023). Frustration responses of single and partnered mothers to prolonged infant crying, *Journal of Family Psychology*. 37(5), 699–708. <https://doi.org/10.1037/fam0001077>.
6. **Lee, M.**, Lori, A., Langford, N., & Rilling, JK. (2022). Enhanced endogenous oxytocin signaling in the brain modulates neural responses to social misalignment and promotes conformity in humans: a multi-locus genetic profile approach, *Psychoneuroendocrinology*, 144, 105869.
7. **Lee, M.**, Lindo, J., & Rilling, JK. (2022). Exploring gene-culture coevolution in humans by inferring neuroendophenotypes: a case study of the oxytocin receptor gene and cultural tightness, *Genes, Brain and Behavior*, 21(3), e12783.
8. Rilling, JK., Gonzalez, A., & **Lee, M.** (2021). The neural correlates of grandmaternal caregiving, *Proceedings of the Royal Society B*, 288(1963), 20211997.
9. Kim, EY., Sul, S., **Lee, M.**, Lim, KY., Shin NY., Kim SN.,... Kim, H., (2021). Effects of oxytocin on social comparisons in intergroup situations, *Brain Sciences*, 11, 9, 1227.
10. Hannikainen, I. R., Machery, E., Rose, D., Sousa, P., Cova, F., BUCHTEL, E. E. K., ... **Lee, M.**, ... & Rosas, A. (2019). For whom does determinism undermine moral responsibility? Surveying the conditions for free will across cultures. *Frontiers in Psychology*, 10, 2428.
11. **Lee, M.**, Sul, S., & Kim, H. (2018). Social observation increases deontological judgments in moral dilemmas, *Evolution and Human Behavior*, 39(6), 611-621.
12. Jung, DH, Sul, S, **Lee, M** & Kim, H. (2018). Social observation increases functional segregation between MPFC sub-regions predicting prosocial consumer decisions. *Scientific Reports*, 8(1), 3368.
13. Cova, F., Machery, E., Stich, S., Alai, M., Berniunas, R.,...**Lee, M.**,... & Cohnitz, D. (2018). De pulchritudine non est disputandum? A cross-cultural investigation of the alleged intersubjective validity of aesthetic judgment. *Mind & Language*, 34(3), 317-338.
14. Rose, D., Machery, E., Stich, S., Alai, M., Angelucci, A., Berniūnas, R.,...**Lee, M.**,... & Cohnitz, D. (2017). Nothing at stake in knowledge. *Noūs*, 51(3).
15. Machery, E., Stich, S., Rose, D., Alai, M., Angelucci, A., Berniūnas, R., ,...**Lee, M.**,... & Cohnitz, D. (2017). The Gettier Intuition from South America to Asia. *Journal of Indian Council of Philosophical Research*, 1-25.
16. Rose, D., Machery, E., Stich, S., Alai, M., Angelucci, A., Berniūnas, R.,...**Lee, M.**,... & Cohnitz, D. (2017). Behavioral Circumscription and the Folk Psychology of Belief: A Study in Ethno-

Mentalizing. *Thought: A Journal of Philosophy*, 6(3), 193-203.

17. **Lee, M.**, Sul, S., & Kim, H. (2014). The impact of moral decision style on impression formation. *Korean Journal of Psychology: Social and Personality Psychology*. 28(2), 201-223.
18. Sul, S, **Lee, M.**, & Kim, H. (2014). Measuring individual differences in altruism with altruistic learning task. *Korean Journal of Psychology: General*. 33(2), 467-489.

## Book Chapter

1. Rose, D., Machery, E., Stich, S., Alai, M., Angelucci, A., Berniūnas, R.,..., **Lee, M.**,... & Cohnitz, D. (2020). The Ship of Theseus Puzzle. *Oxford Studies in Experimental Philosophy*, 3, 158-174.

## Manuscript Under Review:

1. Rilling, JK., **Lee, M.**, Zhou, C., Perkins, M., Hepburn, K., & Gaser, C. Caregiving is associated with lower brain age in humans.
2. Rilling, JK., **Lee, M.**, Zhou, C., & Lindo, J. Grandmotherhood is associated with reduced *OXTR* DNA methylation.

## Manuscript in Preparation:

1. **Lee, M.**, Gonzalez, A., & Rilling, JK., Distinct neural representations of grandchildren within the caregiving network are associated with grandmaternal caregiving.
2. **Lee, M.**, Lori, A., Langford, N., & Rilling, JK., A common oxytocin receptor gene (*OXTR*) polymorphism modulates neural responses to negative facial micro-expressions.
3. **Lee, M.**, Lindo, J., & Rilling, JK. Gene-culture coevolution of agriculture and enhanced oxytocin signaling in the human brain: an ancient DNA analysis on historically rice-farming subpopulations in China.
4. Sul, S., Yoo, MH., Kim, EY, **Lee, M.**, Lim, KO, Shin, NY, Kim., SN., & Kim, H., Oxytocin changes value signals reflected in amygdala activity and connectivity during prosocial learning under intergroup context.

## CONFERENCE PRESENTATIONS

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1. **Lee, M.**, Gonzalez, A., & Rilling, JK (2024), Grandchildren are distinctly represented in the caregiving network in the grandmaternal brain, Social and Affective Neuroscience Society Annual Meeting, Santa Barbara, CA, USA (Accepted for a poster presentation).
2. **Lee, M.**, Gallagher, P, Zhou, C, Shi, M, Treadway, M, & Rilling, JK (2023), Parenting and mating motivation and brain function in expecting fathers, Social and Affective Neuroscience Society Annual Meeting, Santa Barbara, CA, USA.
3. Rilling, JK, **Lee, M.**, McIsaac, J., Factor, S., Gallagher, P., Kim, J., Zhang, J., Zhou, Z., McDade, T., Hepburn, K., and Perkins, M (2023), Evaluation of a Photo Captioning Cognitive Empathy Intervention for Dementia Caregivers, Social and Affective Neuroscience Society Annual Meeting, Santa Barbara,

CA, USA.

4. **Lee, M**, Lori, A, Langford, N, & Rilling, JK (2022), Neural correlates of smile authenticity judgments and the modulatory role of the oxytocin receptor gene (*OXTR*), Social and Affective Neuroscience Society Annual Meeting (Virtual).
5. Zhang, J, Factor, S., Kim, J, **Lee, M**, Perkins, MM, & Rilling, JK (2021), The neurobiology of adult caregiving, Social and Affective Neuroscience Society Annual Meeting (Virtual).
6. **Lee, M**, Lori, A, Langford, N, & Rilling, JK (2021), A common oxytocin receptor gene (*OXTR*) polymorphism modulates the perception and neural response to dynamic facial micro-expressions, Annual Meeting of Society for Social Neuroscience (S4SN) (Virtual).
7. **Lee, M**, Lori, A, Langford, N, & Rilling, JK (2021), A common oxytocin receptor gene (*OXTR*) polymorphism modulates the neural responses to social misalignment, Annual Meeting of Social and Affective Neuroscience Society (Virtual).
8. **Lee, M**, Lindo, J., & Rilling, JK (2021), Cross-population comparison of oxytocin receptor gene (*OXTR*) allele frequencies reveals a signature of local- and species-level selection for enhanced oxytocin signaling in the human brain, Annual meeting of American Association for Biological Anthropology (Virtual).
9. Rilling, JK, Gonzales, A, & **Lee, M** (2021), Biological correlates of grandmaternal caregiving, Annual Meeting of Social and Affective Neuroscience Society (Virtual).
10. **Lee, M**, Lori, A, Langford, N, & Rilling, JK (2021), A common allele in the oxytocin receptor gene (*OXTR*) polymorphism modulates brain responses to genuine vs. posed smiles, Annual Meeting of Society for Social Neuroscience (S4SN) (Virtual).
11. **Lee, M**, Lori, A, Langford, N, & Rilling, J.K (2020), A common oxytocin receptor gene (*OXTR*) polymorphism modulates the neural responses to social misalignment, International Cultural Neuroscience Society virtual conference (Virtual).
12. **Lee, M**, Lori, A, Langford, N, & Rilling, J.K (2019), A common polymorphism in the oxytocin receptor gene (*OXTR*) influences perception of spontaneous facial micro-expressions, Annual meeting of Social and Affective Neuroscience Society, Miami Beach, USA.
13. Rilling, JK, Richey, L, Graf, D, **Lee, M**, Zhao, Y, Moore, R, & Epstein, C (2019), The role of the precuneus in accurate long-range projectile throwing: a transcranial magnetic stimulation study, Annual meeting of American Association of Biological Anthropology, Ohio, USA.
14. Yoo, M., Sul, S, Kim, EU, **Lee, M**, Lim KO, Shin, NY, Kim, SN, Kwon, JS, & Kim, H (2018), Oxytocin modulates amygdala-prefrontal connectivity during social learning for both ingroup and outgroup, 16<sup>th</sup> Meeting for Society for Neuroeconomics, Philadelphia, USA.
15. **Lee, M**, Sul, S, Kim, H (2016), The Impact of observer on the judgments in the Moral Dilemma, Society for Philosophy and Psychology, Austin, USA.
16. **Lee, M**, Sul, S, Kim, EU, Lim KO, Shin, NY, Kim, SN, Kwon, JS, & Kim, H (2015), Oxytocin differentially affects moral judgment of permissibility and punishment, Annual Meeting of Society for

Neuroscience, Chicago, USA.

17. **Lee, M**, Sul, S, Kim, EU, Lim KO, Shin, NY, Kim, SN, Kwon, JS, & Kim, H (2015), Oxytocin differentially affects moral judgment of permissibility and punishment, Annual Meeting of Society for Social Neuroscience, Chicago, USA.
18. Jung DH, Sul, S, **Lee, M** & Kim, H. (2015). Neural mechanisms underlying ethical consumption influenced by others' observation, Annual Meeting of Korean Psychological Association, Seoul, Korea.
19. Kim, EU, Sul, S, **Lee, M** & Kim, H (2015). Oxytocin facilitates social comparison with out-group but not with in-group members, Annual Meeting of Social & Affective Neuroscience Society, Boston, USA.
20. **Lee, M**, Sul, S, Kim, H (2014). The impact of moral decision style on impression formation: how we perceive utilitarian vs. deontological individuals, Korean Society for Cognitive and Biological Psychology, Buyeo, Korea.
21. Jung DH, Sul, S, **Lee, M** & Kim, H. (2014). Neural mechanisms underlying ethical consumption influenced by others' observation. Korean Society for Cognitive and Biological Psychology, Buyeo, Korea.

## **OTHER ACADEMIC PRESENTATIONS & INVITED TALKS**

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1. **Lee M**. "Neural correlates of grandmaternal caregiving", Graduate Division of Biological and Biomedical Sciences (GDBBS), Emory University, Sep, 2022 (Virtual).
2. **Lee M**. "*OXTR* and variation in human social norms: linking gene-culture coevolution and imaging genetics approach to study higher level social cognition in humans", Laboratory for Social and Decision-making Neuroscience (LSDN), Department of Psychology, Korea University, June, 2022 (Virtual).
3. **Lee M**. "Genetic and neural basis of cultural norm acquisition", Center for Mind, Brain and Culture (CMBC), Emory University, May, 2022, Atlanta, GA.
4. **Lee M**. "Mechanisms of cultural norm acquisition in humans: a biologically-guided imaging genetics approach and its implications for developmental neuroscience research", Affective Neurodynamic Developmental (AND) Lab, Department of Psychology, Virginia Tech, May, 2021 (Virtual).
5. **Lee M**. "Gene-culture coevolution of *OXTR* and cultural-tightness in humans", The Young Lab, Graduate Division of Biological and Biomedical Sciences (GDBBS), Emory University, April, 2021 (Virtual).
6. **Lee M**. "A common polymorphism in the oxytocin receptor gene (*OXTR*) rs53576 influences perception of dynamic facial micro-expressions", Graduate Research Interdisciplinary Team of Scholars (GRITS) Seminar, Emory University, March, 2019., Atlanta, GA.

## **TEACHING, MENTORING & OTHER RESEARCH EXPERIENCE**

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### **Teaching**

- 2020 - Instructor, ANT/NBB317 *Human Social Neuroscience* (Dept. of Anthropology/Neuroscience and Behavioral Biology, Emory University)
- 2018 - Teaching associateship, ANT201 *Concepts and Methods of Biological Anthropology* (Dept. of Anthropology, Emory University, Instructor: Dr. Craig Hadely)
  - Teaching assistantship, ANT210 *Human Biology* (Dept. of Anthropology, Emory University, Instructor: Dr. Carol Worthman)
- 2017 - Teaching assistantship, ANT201 *Foundations of Human Behavior* (Dept. of Anthropology, Emory University, Instructor: Drs. James K. Rilling and Adrian Jaeggi)
- 2013 - Teaching assistant, *Brain and Human Society* (Dept. of Psychology, Korea University, Instructor: Dr. Hackjin Kim)
  - Teaching assistant, *Psychology of Decision Making* (Dept. of Psychology, Korea University, Instructor: Dr. Hackjin Kim)
- 2012 - Teaching assistant, *Cognitive Neuroscience* (Dept. of Psychology, Korea University Instructor: Dr. Chai-Youn Kim)

## **Mentoring**

- 2022 - 2023 - Co-supervised an undergraduate Scholarly Inquire and Research Experience (SIRE) project titled, "*Neurobiology of adult caregiving and its modulation by an intervention designed to increase cognitive empathy*" (Data curation, analysis and writing).
- 2021 - 2022 - Co-supervised an undergraduate honors thesis project titled, "*Neurobiology of adult caregiving*" (Data curation, analysis and writing).
- 2021 - 2022 - Co-supervised an undergraduate honors thesis project titled, "*Frustration responses of single mothers to prolonged infant crying*" (Study design, data curation, experimental setup, data analyses, and writing).
- 2020 - 2021 - Co-supervised fMRI data-curation and analysis for a project titled, "*The neural correlates of paternal consoling behavior and frustration in response to infant crying.*"
- 2019 - 2020 - Co-supervised an undergraduate honors thesis project titled, "*Perception of male and female infant cry aversiveness by adult men*" (Data analyses).

## **Other Experience, Training & Extra-Curricular Activity**

- 2019 - 2022 - Supervised MRI scans as a FERN-certified MRI operator; performed more than 200 functional/structural MRI scans on human participants of diverse backgrounds. (e.g., grandmothers, adult caregivers, first-time fathers, college students, etc.)
- 2018 - 2022 - Emory Center for Mind, Brain, and Culture (CMBC) certificate trainee
- 2018 - 2019 - MRI operator training from personnel at Emory Facility for Education and Research in Neuroscience (FERN)
- 2020 - Emory College in Online Teaching and Mentoring Training (ECOTS)
- 2018 - 2019 - Anthropology graduate student association (AGSA) colloquium committee
- 2018 - Training from personnel in Emory University School of Medicine in TMS techniques.

- 2018 - Additional training from personnel in Emory University Department of Psychology in fMRI data collection and analysis (AFNI and FSL).
- 2017 - Training from personnel in University of Oxford in fMRI image analysis (FSL) at University of British Columbia, Vancouver, Canada.
- 2015 - Training from personnel in LSDN in fMRI image analysis (SPM8), Seoul, Korea.
- 2014 - 2018 - Collaborator, data curation for the “Intellectual Humility and Cultural Diversity in Philosophy” project, Funded by John Templeton Foundation (PIs: Drs. Stephen Stich and Edouard Machery)
- 2014 - Conference coordinator, “Cross-Cultural Perspectives on Moral Psychology”, led by Rutgers University Research Group on Evolution & Cognition and Korea University.
- 2012 - 2013 - Research assistant, Laboratory for Social & Decision Making Neuroscience (LSDN) Korea University (PI: Dr. Hackjin Kim)
- 2011 - 2012 - Research assistant, Laboratory for Social & Cultural Psychology, Korea University (PI: Dr. TaeKyun Hur)
- 2010 - 2011 - President, Korea University undergraduate student’s association for psychological research.
- 2006 - 2010 - Student instructor/volunteer at a regional children’s center.  
(<https://ion.or.kr/26577/content>)

## **EXTERNAL SERVICES**

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### **Editorial Board**

*Frontiers in Psychology*

*Frontiers in Ecology and Evolution*

### **Ad Hoc Reviewer**

*Brain Imaging and Behavior*

*Scientific Reports*

*Evolutionary Human Sciences*

*Personality and Individual Differences*

*Cognitive, Affective and Behavioral Neuroscience*

## **GRANTS, FELLOWSHIP/SCHOLARSHIP & AWARDS**

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## **HONORS & AWARDS**

- 2018 - Most relevant paper in the field, awarded by Neuro-marketing Science & Business Association (NMSBA) (“Social observation increases functional segregation between MPFC sub-regions predicting prosocial consumer decisions”)
- 2014 - Best paper prize in Psychology, awarded by Korean Psychological Association (“Measuring individual differences in altruism with altruistic learning task”)
- 2013 - Summa Cum Laude, Department of Psychology, Korea University.

## **CERTIFICATE**

- 2022 - Emory Graduate Certificate in Mind, Brain, & Culture (for Interdisciplinary research)

## **SCHOLARSHIP/FELLOWSHIP**

- 2016 - 2021 - The Laney Graduate School Fellowship (a special admission fellowship awarded to exceptionally qualified applicants across the graduate programs)
- 2020 Fall - Emory College Online Teaching Strategy (ECOTS) Training Scholarship
- 2014 Fall - Korea University Institute for Foreign Language Study Work Scholarship
- 2014 Fall - Brain Korea 21 Plus Research Scholarship
- 2013 Fall - Korea University Graduate School Scholarship
- 2013 Spring - Korea University Graduate School Research Assistantship
- 2012 Fall - Undergraduate Teaching/Tutoring Scholarship
- 2012 Spring - Undergraduate Student Scholarship for academic excellence (Best Honors)
- 2011 Fall - Undergraduate Student Scholarship for academic excellence (Best Honors)
- 2011 Spring - Undergraduate Student Scholarship for academic excellence (Best Honors)
- 2007 Spring - Undergraduate Student Scholarship for academic excellence (Best Honors)

## **CURRENT/PAST GRANT SUPPORT**

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- 2019 - 2022 - Genetic and Neural Basis of Cultural Norm Acquisition  
(Silvio O Conte Center for Oxytocin and Social Cognition Pilot Research Grant / supported by NIMH, P50MH100023: \$22,500, PI: Dr. Larry Young)
- 2019 - 2022 - Genetic and Neural Basis of Cultural Norm Acquisition  
(Wenner-Gren Foundation Dissertation Fieldwork Grant: \$20,000, PI: Minwoo Lee)
- 2019 - 2021 - Genetic and Neural Basis of Cultural Norm Acquisition  
(Emory Facility for Education and Research in Neuroscience Dissertation Research Grant, funding support for fMRI/MRI scanning, PI: Minwoo Lee)
- 2018 - 2019 - Genetic basis of moral learning: exploring the role of *OXTR* in cultural norm acquisition (Emory Center for Mind, Brain and Culture Interdisciplinary Neuroscience Pilot Research Grant: \$4,000, PI: Minwoo Lee and Dr. James K. Rilling)



## AFFILIATION & MEMBERSHIP

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Social and Affective Neuroscience Society  
Society for Social Neuroscience  
American Association for Biological Anthropology  
Korean Society for Cognitive and Biological Psychology

## REFERENCES

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**James K. Rilling, Ph.D.**  
**(Ph.D. Advisor)**

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Emory University  
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**(Dissertation Committee)**

Professor  
Department of Anthropology  
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**Hackjin Kim, Ph.D.**  
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