

Minwoo (Daniel) Lee

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RESEARCH INTERESTS

I use **behavioral experiments** and **functional neuroimaging techniques** to study the genetic and neural underpinnings of uniquely human social cognition and behaviors.

My research interest has revolved around 1) the associations between the **neuropeptide oxytocin** and the evolution of prosocial preference in humans, 2) proximate mechanisms that support **social learning of cultural norms and beliefs**, and 3) translational implications of imaging genetics research for understanding and predicting the **patterns of social adaptation and mental/physical health** among socially marginalized groups.

Keywords: social learning, prosociality, oxytocin, fMRI, cultural adaptation.

CURRENT POSITION/AFFILIATION

2023-Present - Postdoctoral research associate, *Department of Psychology, Cornell University*
2022-Present – Affiliated data scientist, *Department of Anthropology, Emory University*

EDUCATION

2022 Ph.D., Anthropology, Emory University (Advisor: Dr. James K. Rilling)
2016 M.S., Cognitive and behavioral neuroscience, Korea University (Advisor: Dr. Hackjin Kim)
2012 B.A., Psychology (Summa Cum Laude), Korea University, Seoul, Korea.

RESEARCH SKILLS

- Quantitative/qualitative data analysis tools

- SPSS, R, MATLAB
- MAXQDA

- Programming skills for behavioral and neuroimaging experiment

- Psychtoolbox
- PsychoPy
- MATLAB, R, Python and Bash scripting

- Neuroimaging data analysis & acquisition software

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

PUBLICATIONS

Peer-Reviewed Journal Articles:

1. **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*, 114144.
2. **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.
3. **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.
4. Rilling, JK., Gonzalez, A., & **Lee, M.** (2021). The neural correlates of grandmaternal caregiving, *Proceedings of the Royal Society B*, 288, 1963, 20211997.
5. 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.
6. 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.
7. **Lee, M.**, Sul, S., & Kim, H. (2018). Social observation increases deontological judgments in moral dilemmas, *Evolution and Human Behavior*, 39(6), 611-621.
8. 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.
9. 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.
10. 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).
11. 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.
12. 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.
13. **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.
14. 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., Gallagher, P., & **Lee, M.**, Mating-related stimuli induce rapid shifts in fathers' assessments of infants.
2. Rahman, B., **Lee, M.**, & Rilling, JK., Frustration responses of single and partnered mothers to prolonged infant crying.
3. Joseph, S., **Lee, M.**, Lindo, J., & Rilling, JK., Paleogenomic insights into cooperation and conflict in the ancient Andes from positive selection on oxytocin pathway genes.

Manuscript in Preparation:

1. **Lee, M.**, Lori, A., Langford, N., & Rilling, JK., A common oxytocin receptor gene (*OXTR*) polymorphism modulates neural responses to negative facial micro-expressions.
2. **Lee, M.**, Joseph, S., Lindo, J., & Rilling, JK., Ancient DNA analysis reveals a signature of positive selection for oxytocin signaling in the brain among historically rice-farming subpopulations in China.
3. 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

1. **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*), 2022, Social and Affective Neuroscience Society Annual Meeting (Virtual).
2. Zhang, J, Factor, S., Kim, J, **Lee, M.**, Perkins, MM, & Rilling, JK (2021), The neurobiology of adult caregiving, 2022, Social and Affective Neuroscience Society Annual Meeting (Virtual).
3. **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, 2021, Annual Meeting of Society for Social Neuroscience (Virtual).
4. **Lee, M.**, Lori, A, Langford, N, & Rilling, JK (2021), A common oxytocin receptor gene (*OXTR*) polymorphism modulates the neural responses to social misalignment, 2021, Annual Meeting of Social and Affective Neuroscience Society (Virtual).
5. **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, 2021, Annual meeting of American Association for Biological Anthropology (Virtual).
6. Rilling, JK, Gonzales, A, & **Lee, M.** (2021), Biological correlates of grandmaternal caregiving, 2021, Annual Meeting of Social and Affective Neuroscience Society (Virtual).
7. **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, 2021, Annual

Meeting of Society for Social Neuroscience (Virtual).

8. **Lee, M**, Lori, A, Langford, N, & Rilling, J.K (2020), A common oxytocin receptor gene (OXTR) polymorphism modulates the neural responses to social misalignment, 2020, International Cultural Neuroscience Society virtual conference (Virtual).
9. **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, 2019, Annual meeting of Social and Affective Neuroscience Society, Miami Beach, USA.
10. 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, 2019, Annual meeting of American Association of Biological Anthropology, Ohio, USA.
11. 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, 16th Meeting for Society for Neuroeconomics, 2018, Philadelphia, USA.
12. **Lee, M**, Sul, S, Kim, H (2016), The Impact of observer on the judgments in the Moral Dilemma, 2016, Society for Philosophy and Psychology, Austin, USA.
13. **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, 2015 Annual Meeting of Society for Neuroscience, Chicago, USA.
14. **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, 2015 Annual Meeting of Society for Social Neuroscience, Chicago, USA.
15. Jung DH, Sul, S, **Lee, M** & Kim, H. (2015). Neural mechanisms underlying ethical consumption influenced by others' observation. 2015 Annual Meeting of Korean Psychological Association, Seoul, Korea.
16. Kim, EU, Sul, S, **Lee, M** & Kim, H (2015). Oxytocin facilitates social comparison with out-group but not with in-group members, 2015 Annual Meeting of Social & Affective Neuroscience Society, Boston, USA.
17. **Lee, M**, Sul, S, Kim, H (2014). The impact of moral decision style on impression formation: how we perceive utilitarian vs. deontological individuals, 2014 Korean Society for Cognitive and Biological Psychology, Buyeo, Korea.
18. 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.

INVITED TALK

1. **Lee M**. "Enhanced endogenous oxytocin signaling in the brain modulates neural responses to social misalignment and predicts conformity in humans", The Laboratory on Social & Affective Neuroscience, Department of Psychology, Georgetown University, Dec, 2022 (Virtual).

2. **Lee M.** “Neural correlates of grandmaternal caregiving”, Graduate Division of Biological and Biomedical Sciences (GDBBS), Emory University, Sep, 2022 (Virtual).
3. **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”, Cook lab, Department of Psychology, University of Birmingham, June, 2022 (Virtual).
4. **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).
5. **Lee M.** “Genetic and neural basis of cultural norm acquisition”, Center for Mind, Brain and Culture (CMBC) Capstone presentation, Emory University, May, 2022, Atlanta, GA.
6. **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).
7. **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).
8. **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

Teaching

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

Mentoring

- 2022 - present - 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 Research 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 demographic traits. (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 center.
(<https://ion.or.kr/26577/content>)

External Service – Ad Hoc Journal Reviewer

- 2022 - *Cognitive, Affective and Behavioral Neuroscience (CABN)*

GRANTS, FELLOWSHIP/SCHOLARSHIP & AWARDS

HONORS & AWARDS

- 2014 - Best paper prize, awarded by Korean Psychological Association (“Measuring individual differences in altruism with altruistic learning task”)
- 2013 - Great Honors, Department of Psychology, Korea University.
(Summa Cum Laude)

ACADEMIC CERTIFICATE

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

SCHOLARSHIP/FELLOWSHIP

- 2016 - 2021 - The Laney Graduate School Special Admission Fellowship (\$12,500 for 5 years)
- 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 Assistant Scholarship
- 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

- 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

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

REFERENCES

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

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Hackjin Kim, Ph.D.
(M.S. Thesis Advisor)

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Department of Psychology
Korea University
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(Dissertation Committee)

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Department of Anthropology
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