Luke J. Chang

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Academic Appointments

2015 - Present	**Dartmouth College**, Hanover, NH
	Position: Assistant Professor in Psychological and Brain Sciences

Education & Training

2012-2015   **University of Colorado Boulder**, Boulder, CO
Position: Postdoctoral Fellow
Advisor: Tor Wager, PhD

2011 – 2012   **University of California Los Angeles Semel Institute for Neuroscience,** Los Angeles, CA
Position: Predoctoral Clinical Psychology Intern (Health Behavior Track)
Advisor: David Wellisch, PhD

2006 – 2012   **University of Arizona**, Tucson, AZ
Degree: Doctor of Philosophy in Clinical Psychology (Minor: neuropsychology)
Advisor: Alan Sanfey, PhD, John Allen, PhD
Dissertation: Deconstructing the role of expectations in social decision-making with Decision Neuroscience
Committee: Alan Sanfey, PhD (Chair), John Allen, PhD, Lee Ryan, PhD, Dave Sbarra, PhD

2004 – 2006   **New School for Social Research,** New York, NY
Degree: Master of Arts in Psychology
Advisor: David Silbersweig, MD, Marcel Kinsbourne, DM
Thesis: The structural correlates of affect regulation: A voxel-based morphometric study of borderline personality disorder.

1998 – 2002   **Reed College,** Portland, OR
Degree: Bachelor of Arts in Psychology
Advisor: Jennifer Henderlong-Corpus, PhD
Thesis: Cheating and self-handicapping: An examination of the relationship between academic dishonesty, self-handicapping behaviors, motivational goals, self-esteem, and academic integrity.

Funding

2016 – Present   **PI**, Neukom Institute for Computational Science, CompX Grant
Crowd sourced development and validation of Neuro-computational models of affect
Total Amount: $25,000

2014 – 2016   **Co-I**, National Institute of Health, Big Data to Knowledge (PI: Tor Wager)
fMRI-based Biomarkers for Multiple Components of Pain
Total Amount: $104,572

2012 – 2015   **Co-I**, National Institute of Health (PI: Tal Yarkoni)
                     Large-scale automated synthesis of functional neuroimaging data
                     Total Amount: $2,754,805

2009 – 2012   **PI,** National Institute of Mental Health, National Research and Service Award
                     Mechanisms Underlying Social Cooperative Behavior
                     Total Amount: $91,746

Publications

1) Woo, C.W., **Chang, L.J.,** Lindquist, M., & Wager, T.D. (In Press). Brain signatures and models in translational imaging. *Nature Neuroscience.*

2) **Chang, L.J.** & Jolly, E. (In Press). Emotions as computational signals of goal error. In *Nature of Emotion*, Fox, D., Lapate, R., Shackman, A., & Davidson, R.J (Eds). Oxford Press.

3) Cheong, J.H., Jolly, E., Sul, S., & **Chang, L.J.** (In Press). Computational models in social neuroscience. In *Computational of Brain and Behavior*, Moustafa, A (Ed), Wiley-Blackwell.

4) Ashar, J.Y., **Chang, L.J.**, & Wager, T.D. (In Press). Brain mechanisms of the placebo effect: An affective appraisal account. *Annual Reviews of Clinical Psychology.*

5) Eisenbarth, H., **Chang.**, L.J., & Wager, T.D. (2016). Multivariate brain prediction of heart rate and skin conductance responses to social threat. *Journal of Neuroscience*, 36(47):11987-11998.

6) De La Vega, A., **Chang, L.J.,** Banich, M.T., Wager, T.D., & Yarkoni, T. (2016). Meta-analytic functional analysis of human medial frontal cortex reveals tripartite organization. *Journal of Neuroscience*.

7) Krishan, A., Woo, C.W.*, **Chang, L.J.***, Ruzic, L., Jackson, P., Wager, T.D. (2016). Somatic and vicarious pain are represented by dissociable multivariate brain patterns. *eLife.* *denotes equal contributions.

8) Wager, T.D., Atlas, L.Y., Botvinick, M., **Chang, L.J.**, Coghill, R.C., Davis, K.D., Iannetti, G.D., Poldrack, R.A., Shackman, A.J., & Yarkoni, T. Pain in the ACC? Commentary on Lieberman and Eisenberger. (2016). *Proceedings of the National Academy of Science*.

9) Lindquist, M.A., Krishnan, A., Lopez-Sola, M., Jepma, M., Woo, C.W., Roy, M., Atlas, L.Y., **Chang., L.J.**, Losin, L., Eisenbarth, H., Ashar, Y.K., Koban, L., Delk, Z., & Wager, T.D. (2015). Group-regularized individual prediction: Theory and application to pain*. Neuroimage*.

10) **Chang, L.J.** & Smith, A. (2015). Social emotions and psychological games. *Current Opinions in Behavioral Sciences,* 5:133-140.

11) Yu, H., Shen, B., Yin, Y., Blue, P., & **Chang, L.J**. (2015). Dissociating guilt- and inequity-aversion in cooperation and norm compliance. *Journal of Neuroscience*, 35(24), 8973-8975.

12) Fareri, D.S.*, **Chang, L.J.*,** Delgado, M.R. (2015). Neural and computational mechanisms underlying interpersonal collaboration. *Journal of Neuroscience,* 35(21), 8170-8180. *denotes equal contributions.

13) **Chang, L.J**., Gianaros, P., Manuck, S., Krishnan, K., & Wager, T.D. (2015). A sensitive and specific neural signature for picture induced affect. *PLoS Biology,* 13(6), 1-28.

14) **Chang, L.J**., Reddan, M., Ashar, Y.K., Eisenbarth, H., & Wager, T.D. (2015). The challenges of forecasting resilience. *Behavioral Brain Sciences Commentary,* 38, 26-27.

15) Sanfey, A.G., Stallen, M., & **Chang, L.J**. (2014). Norms and expectations in social decision-making. *Trends In Cognitive Science, 18(4), 172-174.*

16) **Chang, L.J.** & Koban, L. (2013). Modeling emotion and learning of norms in social interactions. *Journal of Neuroscience, 33(18), 7615-7617.*

17) **Chang, L.J.,** Yarkoni, T., Khaw, M.W., & Sanfey, A.G. (2013). Decoding the role of the human insula in human cognition: Functional parcellation and large-scale reverse inference*. Cerebral Cortex, 23(3),* 739-749.

18) **Chang, L.J.,** & Sanfey, A.G. (2013). Great expectations: Neural computations underlying the use of social norms in decision-making. *Social Cognitive Affective Neuroscience, 8(3),* 277-284.

19) Brown, A.D., Root, J.C., Romano, T., **Chang, L.J**., & Hirst, W. (2013). The limits of memory and imagination: Overgeneralized autobiographical Memory and future thinking in combat veterans with posttraumatic stress disorder. *Behavior Therapy and Experimental Psychiatry*, *44(1),* 129-134.

20) Fareri, D.S., **Chang, L.J.,** Delgado, M.R. (2012). Effects of experienced social information on trust decisions and neural reward circuitry. *Frontiers in Decision Neuroscience, 6,* 1- 17.

21) Kahnt, T., **Chang, L.J.,** Park, S.Q., Heinzle, J., Haynes, J.D. (2012). Connectivity based parcellation of the human orbitofrontal cortex. *Journal of Neuroscience, 32(8)*, 6240-6250.

22) Harle, K.M., **Chang, L.J.,** van't Wout, M., & Sanfey, A.G. (2012). The neural underpinnings of mood-driven biases in social economic decision-making*. Neuroimage, 61(1)*, 32-40.

23) **Chang, L.J.,** Smith, A., Dufwenberg, M., & Sanfey, A.G. (2011). Triangulating the neural, psychological, and economic bases of guilt aversion. *Neuron, 70,* 560-572.

24) Van't Wout, M, **Chang, L.J**., & Sanfey, AG. (2010). Emotion regulation and social interactive decision-making. *Emotion, 10(6)*, 815-821.

25) **Chang, L. J**., Doll, B., Van't Wout, M., Frank, M., Sanfey, A.G. (2010). Seeing is believing: Trustworthiness as a dynamic belief. *Cognitive Psychology, 61(2),* 87-105.

26) **Chang, L.J.,** & Sanfey, A.G. (2009). Unforgettable Ultimatums? Expectation violations promote enhanced social memory following economic exchange. *Frontiers in Behavioral Neuroscience, 3, 1-12.*

27) **Chang, L.J.** & Sanfey, A.G. (2008). Emotion, decision-making, and the brain. In D. Houser & K. McCabe (Eds.), *Neuroeconomics.* Elsevier, 31-53.

28) Sanfey, A.G. & **Chang, L.J.** Multiple systems in decision-making. (2008). In W.T. Tucker, S. Ferson, A. Finkel, T.F. Long, D. Slavin, P. Wright (Eds.), *Strategies for risk communication: Evolution, evidence, experience*. New York: Annals of the New York Academy of Science, 1128, 53-62.

29) Protopopescu, X., Pan, H., Tuescher, O., Root, J., **Chang, L.,** Altemus, M., Polanecsky, M., McEwen, B., Stern, E., & Silbersweig, D. (2008). Toward a Functional Neuroanatomy of Premenstrual Dysphoric Disorder: Differential Amygdalar, Orbitofrontal and Ventral Striatal Activity. *Journal of Affective Disorders, 108,* 87-94.

30) Butler, T., Pan, H., Tuescher, O., Engelien, A., Goldstein, M., Epstein, J., Weisholtz, D., Protopotescu, X., Root, J. C., Cunningham-Bussell, A.C., **Chang, L.,** Xie, X.H., Chen, Q., Phelps, E.A., Ledoux, J.E., Stern, E., Silbersweig, D.A. (2007). Human fear-related motor neurocircuitry*. Neuroscience, 150 (1)* 1-7.

31) Butler, T., Imperato-McGinley, J., Pan, H., Voyer, D., Cunningham-Bussel, A. C., **Chang, L.**, Zhu, Y. S., Cordero, J., Stern, E., Silbersweig, D. (2007). Sex specificity of ventral anterior cingulate cortex suppression during a cognitive task. *Human Brain Mapping, 28 (11),* 1206-12.

32) Root, J.C., Robbins, R., **Chang, L.**, & Van Gorp, W.G. (2006). Detection of suboptimal effort on the California Verbal Learning Test, Second Edition: analysis and normative data for forced choice recognition. *Journal of the International Neuropsychological Society, 12 (5),* 688-96.

Manuscripts Under Review

Taylor, V., **Chang, L.J**., Rainville, P., & Roy, M. *Learned Expectations and Uncertainty Facilitate Pain during Classical Conditioning.* Manuscript Under Review.

Sul, S., Guroglu, B., Crone, E.A., & **Chang, L.J.** *Medial prefrontal cortical thinning mediates shifts in other-regarding preferences during adolescence.* Manuscript Under Review.

Fox, A.S., **Chang, L.J**., Gorgolewski, K., & Yarkoni, T. *Bridging genetics and psychology using large-scale spatial analysis of neuroimaging and neurogenetic data.* Manuscript Under Revision at Nature Neuroscience

Shvil, E., Papini, S., Markowitz, J.C., Schafer, S., Sullivan, G.M**., Chang, L.J.,** Rusch, H.L., van der Hoorn, K.R., Milad, M.R., Wager, T.D., & Neria, Y. *Impaired hippocampal-dependent context modulation in posttraumatic stress disorder.* Manuscript Under Review.

Manuscripts In Preparation

Chang, L.J., Eisenbarth, H., Reddan, M., Andrews, E., & Wager, T.D. *Recovering sparse emotional ratings with collaborative filtering.* Manuscript in Preparation.

Chang, L.J., Burnashev, A., & Wager, T.D. Crowd sourced training and validation of multivariate models of psychological states with neuro-learn. Manuscript in Preparation.

Jolly, E., & **Chang, L.J.** *The social benefits of gossip.* Manuscript in Preparation.

Jolly, E., & **Chang, L.J.** *Overcoming the flatland fallacy: the importance of computational models.* Manuscript in Preparation.

Chang, L.J., De La Vega, A., & Yarkoni, T. Fully automated meta-analytic clustering and decoding of human brain activity. Manuscript in Preparation.

Chang, L.J., Smith, A., Dufwenberg, M., Wager, T.D., & Sanfey, A.G. *Computational substrates of guilt.* Manuscript in Preparation.

Rossi, F., Fasel, I., Bartlett, M., Sanfey, A.G & **Chang, L.J**. Affective mechanisms of reinforcement-learning in social and non-social decision-making.

Chaired Conference Symposia

2016	*"Insights into human cognition and emotion using large-scale neuroinformatics" Nanosymposium,* Society for Neuroscience Meeting, San Diego, CA
2016	Co-Chair for Dartmouth Affective Neuroscience Symposium, Hanover, NH
Apr 2014	Computational approaches to social affective neuroscience (co-chaired with Damian Stanley) The 7th Annual Social Affective Neuroscience Society Meeting, Denver, CO

Invited Talks

Nov 2016	Society for Neuroscience Nanosymposium
Jun 2016	Dartmouth Affective Neuroscience Symposium
May 2016	Hanover Rotary Club, Hanover, NH
Nov 2015	Yale University, New Haven, CT
Oct 2015	Harvard University, Cambridge, MA
Oct 2015	The 45th Annual Society for Neuroscience Meeting, Chicago, IL
Sep 2015	University of New Hampshire, Durham, NH
May 2015	University of College London, London, UK
May 2014	The 26th Annual American Psychological Science Meeting, SF, CA
Apr 2014	The 7th Annual Social Affective Neuroscience Society Meeting, Denver, CO Jan 2014
Jan 2014	University of California Santa Barbara, Santa Barbara, CA
Dec 2013	Princeton University, Princeton, NJ
Nov 2013	University of Colorado, Boulder, CO
Nov 2013	Dartmouth College, Hanover, NH
Oct 2013	Harvard University, Cambridge, MA
Sep 2013	University of Amsterdam, Amsterdam, The Netherlands
Sep 2013	Donders Institute for Brain, Cognition, and Behavior, Nijmegen, The Netherlands
Aug 2013	European Society for Cognitive Psychology, Budapest, Hungary
Apr 2013	University of Denver, Denver, CO
Jan 2013	University of Colorado, Boulder, CO
May 2012	UCLA, Department of Psychiatry, Los Angeles, CA
Apr 2012	Duke University, Durham, NC
Apr 2012	Virginia Tech Carilion Research Institute, Roanoke, VA
Mar 2012	University of Colorado, Boulder, CO
Feb 2012	Stanford University, Palo Alto, CA
Jun 2010	Leiden University, Leiden, Netherlands
Sep 2009	The 5th Annual Society for Neuroeconomics Meeting, Evanston, IL.
Nov 2006	Clinical Psychology Datablitz, Tucson, AZ.

Awards & Fellowships

Summer 2010	**Cognitive Science Center Neuroeconomics Summer School,** University of Amsterdam
2009	**Graduate and Professional Student Council Student Showcase - 1st place in Social Sciences & Law,** University of Arizona
2009	**Technology Research Initiative Fund Graduate Student Imaging Fellowship,** University of Arizona

Summer 2008	**Neuroimaging Training Program,** University of California Los Angeles
Summer 2007	**Summer Institute in Cognitive Neuroscience Fellowship,** University of California Santa Barbara
2006 – 2007	**Graduate Minority Fellowship,** University of Arizona
2006 – 2007	**Deans Fellowship,** New School for Social Research (Declined)
2004 – 2006	**University Scholars Award**, New School for Social Research

Ad-hoc Reviewing (Papers, Grants, Proposals)

Behavioral Sciences
Brain and Cognition
Brain Research
Cerebral Cortex
Cognitive Affective Behavioral Neuroscience
Cognitive Computation
DFG – German Research Federation
Emotion
Rotterdam School of Management, Erasmus University
Evolution and Human Behavior
Frontiers in Neuroscience
Journal of Cognitive Neuroscience
Journal of Neuroscience
Journal of Economic Psychology
Human Brain Mapping
Nature Human Behavior
Nature Neuroscience
Neuroimage
Neuron
NSF – National Science Foundation
PLoS One
PLoS Computational Biology
Proceedings for the National Academy of Science
Psychological Science
Science
Scientific Reports
Social Cognitive Affective Neuroscience
Trends in Cognitive Science
University of Trento
Vermont Genetic Network

Service

2015-2016	Social Neuroscience Search Committee
2015	Organizing Committee Social Affective Neuroscience Meeting
2014 – Present	Review Editor Frontiers in Emotion Science
Summer 2013	Guest Lecturer in University of Colorado Science Discovery Program for adolescents
2010 - 2011	Clinical Faculty Search Committee
2008	Psychology Department Mini-Convention Organizer
2006 – 2008	Psychology Department Graduate Student Representative

Software/Programming Skills (http://github.com/ljchang)

Scientific Computing (Matlab, Python, Bash), Statistics (R, Stan, SPSS, SAS), Brain Imaging (NiLearn, FSL, SPM, BrainVoyager, EPrime), Web Development (HTML, CSS, Flask, Meteor, Javascript, JQuery)

Professional Memberships

Society for Neuroscience
Society for Social Neuroscience
Society for Social Affective Neuroscience
Society for Social and Personality Psychology
Society for Neuroeconomics
Organization for Human Brain Mapping
Cognitive Neuroscience Society
American Psychological Society