

# CENDRI HUTCHERSON

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<http://decisionneurolab.com>

## EMPLOYMENT

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<b>University of Toronto</b>	<b>Assistant Professor</b>	<b>2015-</b>
<ul style="list-style-type: none"><li>• Director, Toronto Decision Neuroscience Lab</li></ul>		

## EDUCATION

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<b>California Institute of Technology</b>	<b>Post-doctoral Scholar</b>	<b>2008-2015</b>
<ul style="list-style-type: none"><li>• Supervisor: Antonio Rangel</li></ul>		
<b>Stanford University</b>	<b>Ph.D. in Psychology</b>	<b>2002-2008</b>
<ul style="list-style-type: none"><li>• Advisor: James Gross</li></ul>		
<b>Harvard University</b>	<b>B.A. in Psychology</b>	<b>1998-2002</b>
<ul style="list-style-type: none"><li>• Advisors: Daniel Simons and Robert Stickgold</li><li>• Graduated <i>summa cum laude</i></li></ul>		

## RESEARCH INTERESTS

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**Affective and cognitive influences on decision making** – Computational dynamics of value construction and response selection; controlled and automatic influences on value judgments and decisions; neural mechanisms for the cognitive control of choice behavior

**Computational and neural bases of social behavior** – Computational underpinnings of altruistic and moral behavior; interaction of controlled and automatic processes on social decision making; emotion's role in moral judgment; neural bases of choice for self and other.

## RESEARCH GRANTS AND CONTRACTS

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| <b>2017-2022</b> | <b>Co-Investigator, NIH Conte Center Grant</b> <ul style="list-style-type: none"><li>• Title: The neurobiology of social decision-making: social inference and context.</li><li>• Total Sub-contract Amount: CAD\$371,810</li></ul>  |
| <b>2016-2021</b> | <b>P.I., Natural Sciences and Engineering Research Council Discovery Grant</b> <ul style="list-style-type: none"><li>• Title: Testing the implications of a dynamic, neurally-informed computational model of valuation, decision making, and self-control.</li><li>• Total Amount: CAD\$140,000</li></ul> |

- 2016-2019 P.I., Social Sciences and Humanities Research Council Insight Grant**
- Title: Why are people generous? New model-based approaches to long-standing questions.
  - Total Amount: CAD\$130,468
- 2016-2018 P.I., Connaught New Researcher Award**
- Title: Tracking the dynamics of attention and inhibition during dietary self-control
  - Total Amount: CAD\$34,250
- 2007 P.I., Flora Family Foundation Research Grant**
- Title: Neural Correlates of Socio-moral Judgment
  - Total Amount: \$5,000
- 2005 P.I., Francisco K. Varela Research Grant Mind and Life Institute**
- Title: Neural and Behavioral Correlates of Loving-Kindness Meditation
  - Total Amount: \$10,000

## HONORS AND AWARDS

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2014	Best Poster Award, Society for Neuroeconomics
2008	Psychology Department Continued Excellence in Teaching Award
2006	Psychology Department Graduate Student Teaching Award
2006	Wisconsin Health and Emotions Research Symposium Fellow
2003-2006	NIMH Pre-doctoral Training Grant in Affective Science
2002-2005	Stanford Graduate Fellowship, Regina Casper Fellow
2002	Harvard University Psychology Faculty Distinguished Thesis Prize
2001	Phi Beta Kappa ( <i>one of 48 elected in the fall of senior year</i> )
2000-2002	John Harvard Scholarship
1999	Harvard College Scholarship

## PUBLICATIONS

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Berkman, E., **Hutcherson, C.A.**, Livingston, J. L., Kahn, L. E., & Inzlicht, M. (in press). Self-control as value-based choice. *Current Directions in Psychological Science*.

Inzlicht, M. & **Hutcherson, C.A.** (2017). People work less hard for others. *Nature Human Behaviour*, 1, s41562-017-0148.

**Hutcherson, C.A.**, Bushong, B., & Rangel, A. (2015). A neurocomputational model of altruistic choice and its implications. *Neuron*, 87, 451-462.

**Hutcherson, C.A.**, Montaser Kouhsari, L., Woodward, J. & Rangel, A. (2015). Emotional and utilitarian appraisals of moral dilemmas are encoded in separate areas and integrated in ventromedial prefrontal cortex. *Journal of Neuroscience*, *35*, 12593-12605.

**Hutcherson, C.A.**, Seppälä, E.M., & Gross, J.J. (2015). The neural correlates of social connection. *Cognitive, Affective, and Behavioral Neuroscience*, *15*, 1-15.

Sullivan, N., **Hutcherson, C.A.**, Harris, A.M., & Rangel, A. (2015). Dietary self-control is related to the speed with which health and taste attributes are processed. *Psychological Science*, *26*, 122-134.

Seppala, E.M., **Hutcherson, C.A.**, Nguyen, D.T.H., Doty, J.R. & Gross, J.J. (2014). Loving-kindness meditation: A tool to improve healthcare provider compassion, resilience, and patient care. *Journal of Compassionate Healthcare*, *1*, 1-9.

**Hutcherson, C.A.**, Plassmann, H., Gross, J.J., & Rangel, A. (2012). Cognitive regulation during decision-making shifts behavioral control between ventromedial and dorsolateral value systems. *Journal of Neuroscience*, *32*(39), 13543-13554.

Sokol-Hessner, P., **Hutcherson, C.A.**, Hare, T., & Rangel, A. (2012). Decision value computation in DLPFC and VMPFC adjusts to the available time. *European Journal of Neuroscience*, *35*, 1065-1074.

**Hutcherson, C.A.**, & Gross, J.J. (2011). The moral emotions: a social functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology*, *100*, 719-737.

Pace-Schott, E.F., **Hutcherson, C.A.**, Bemporad, B., Morgan, A., Kumar, A., Hobson, A., & Stickgold, R. (2009). Failure to find executive function deficits following one night's total sleep-deprivation in university students under naturalistic conditions. *Behavioral Sleep Medicine*, *7*, 136-163.

**Hutcherson, C.A.**, Seppälä, E.M., & Gross, J.J. (2008). Loving kindness meditation increases social connectedness. *Emotion*, *8*, 720-724.

**Hutcherson, C.A.**, Goldin, P.R., Ramel, W., McRae, K.N., & Gross, J.J. (2008). Attention and emotion influence the relationship between extraversion and neural response. *Social Cognitive and Affective Neuroscience*, *3*, 71-79.c

Bailenson, J.N., Pontikakis, E. D., Mauss, I.B., Gross, J.J., Jabon, M.E., **Hutcherson, C.A.C.**, Nass, C., & John, O. (2008) Real-time classification of evoked emotions using facial feature tracking and physiological responses. *International Journal of Human Machine Studies*, *66*, 303-317.

**Hutcherson, C.A.**, Goldin, P.R., Ochsner, K.N., Gabrieli, J.D., Feldman Barrett, L., & Gross, J. J. (2005). Attention to emotion: Does rating emotion alter neural response to sad and amusing films? *NeuroImage*, *27*, 656-668.

Goldin, P.R., **Hutcherson, C.A.C.**, Ochsner, K.N., Glover, G.H., Gabrieli, J.D.E., & Gross, J.J. (2005). The neural bases of amusement and sadness: A comparison of block and subject-specific emotion intensity regression approaches. *NeuroImage*, 27, 26-36.

## MANUSCRIPTS UNDER REVIEW AND IN PREPARATION

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*Supervised trainees indicated via underline.*

Lin, H.S., Saunders, B., **Hutcherson, C.A.**, & Inzlicht, M. (submitted revision). Midfrontal theta and pupil dilation parametrically track subjective conflict (but also surprise) during intertemporal choice. *Neuroimage*.

Tusche, A., & **Hutcherson, C.A.** (under revision). Common and distinct neurocomputational mechanisms for flexible attribute representations underlie self-regulation in altruistic and healthy choices. *eLife*.

Cameron, C.D., **Hutcherson, C.A.**, Scheffer, J., Ferguson, A., & Inzlicht, M. (submitted) Empathy is hard work: People choose to avoid empathy because of its cognitive costs.

Harris, A.\* , Clithero, J.\* & **Hutcherson, C.A.\*** (in prep). Accounting for taste: A multiattribute neurocomputational model explains divergent choices for self and others.

**Hutcherson, C.A.**, Tusche, A. & Rangel, A. (in prep). Inhibitory control and virtuous choice: A neurocomputational model.

Schmidt, L., Tusche, A., **Hutcherson, C.A.**, Hare, T., Plassmann, H. (in prep). Grey matter volume in dorsolateral prefrontal cortex predicts self-control success.

Rosenthal, I., **Hutcherson, C.A.**, Adolphs, R., & Stanley, D. (in prep). Model-based analysis of theory-of-mind learning in autism.

\* Equal contribution.

## SELECTED POSTERS AND PRESENTATIONS

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*Supervised trainees indicated via underline.*

**Hutcherson, C.A.** (2017). Neurocomputational insights into social decision making, morality, and self-control. *Talk presented at the York University Social Psychology colloquium series, Toronto, ON.*

- Hutcherson, C.A., Lin, H., Ilangoamaran, R., & Inbar, Y.** (2017). Taboo for you? Computational approaches to sacred values and moral temptation. *Talk presented at the 2017 Society for Experimental Social Psychology annual meeting, Boston, MA.*
- Clithero, J., Harris, A., & **Hutcherson, C.A.** (2017). Accounting for taste: A multi-attribute neurocomputational model explains divergent choices for self and others. *Talk presented at the 2017 Society for Neuroeconomics annual meeting, Toronto, ON.*
- Lin, H., Saunders, B., **Hutcherson, C.A.**, & Inzlicht, M. (2017). Self-control in decision making involves prefrontal theta band oscillatory dynamics. *Poster presented at the 2017 Society for Neuroeconomics annual meeting, Toronto, ON.*
- Lin, H., Saunders, B., **Hutcherson, C.A.**, & Inzlicht, M. (2017). Midfrontal theta and pupil dilation parametrically track subjective conflict (but also surprise) during value-guided choice. *Poster presented at the 2017 Society for Neuroeconomics annual meeting, Toronto, ON.*
- Schmidt, L., Tusche, A., Manoharan, N., **Hutcherson, C.A.**, Hare, T., & Plassmann, H. (2017). Neuroanatomy of the vmPFC and dlPFC predicts individual differences in self-control ability of dietary decision-making across tasks. *Talk presented at the 2017 Society for Neuroeconomics annual meeting, Toronto, ON.*
- Wilson, D., & **Hutcherson, C.A.** (2017). Attention and value integration in multi-attribute choice. *Poster presented at the 2017 Society for Neuroeconomics annual meeting, Toronto ON.*
- Hutcherson, C.A.** (2017). Neurocomputational insights into self-regulation. *Lecture presented at the Duke Summer School for Social Neuroscience and Neuroeconomics, Durham, NC.*
- Lin, H., Saunders, B., **Hutcherson, C. A.**, & Inzlicht, M. (2017). Decision-conflict in the temporal discounting task: Midfrontal theta and pupil dilation track subjective conflict in value-based decisions. *Recipient of a Best Poster Award at the Social & Affective Neuroscience Society annual meeting, Los Angeles, CA.*
- Hutcherson, C.A.** (2017). Neurocomputational approaches to self-control in social and non-social contexts. *Talk presented at the 2017 Self Regulation Preconference at the Society for Personality and Social Psychology.*
- Hutcherson, C.A.** (2016). Neurocomputational insights into social decision making and self-control. *Talk presented at the Neuroimaging Rounds, Toronto Western Hospital, Toronto, ON.*
- Hutcherson, C.A.** & Inbar, Y. (2016). Taboo for you? Computational approaches to taboo tradeoffs and sacred values. *Talk presented at the Society for Judgment and Decision Making annual meeting, Boston, MA.*
- Hutcherson, C.A.** & Tusche, A. (2016). Neural and computational mechanisms for the attentional modulation of value. *Talk presented at the Society for Neuroscience annual meeting, San Diego, CA.*

**Hutcherson, C.A.** & Tusche, A. (2016). Neurocomputational insights into social decision making and self-control. *Talk presented at the California Institute of Technology Conte Meeting, Pasadena, CA.*

Lin, H., Saunders, B., **Hutcherson, C. A.**, & Inzlicht, M. (Sept 2016). Neurometric variation of decision conflict: Neurophysiological signals during intertemporal choice. *Poster presented at the Society for Psychophysiological Research annual meeting, Minneapolis, MN.*

Tusche, A., & **Hutcherson, C.A.** (2016). Neurocomputational mechanisms for the attentional modulation of value. *Talk presented at the Society for Neuroeconomics meeting, Berlin, Germany.*

**Hutcherson, C.A.**, Tusche, A., & Rangel, A. (2016). Neurocomputational insights into values, morals, and self-control. *Talk presented at the Foundations of Utility and Risk Conference, University of Warwick, England.*

**Hutcherson, C.A.**, Tusche, A., & Rangel, A. (2016). Neurocomputational mechanisms for the attentional modulation of value in social and non-social choice domains. *Talk presented at the Center for Vision Science Symposium: The Future of Attention, Rochester, NY.*

**Hutcherson, C.A.**, Tusche, A., & Rangel, A. (2016). Neurocomputational insights into social decision making and self-control. *Talk presented at the 6<sup>th</sup> International Symposium on the Biology of Decision Making, Paris, France.*

**Hutcherson, C.A.**, Sullivan, N., & Rangel, A. (November, 2014). Delays in computing health information and inhibiting taste information influence healthy eating. *Talk presented at the 2014 meeting of the Society for Judgment and Decision Making.*

**Hutcherson, C.A.**, Bushong, B., & Rangel, A. (September, 2014). A neurocomputational model of altruistic choice and its modulation by attention. *Awarded Best Poster at the 2014 meeting of the Society for Neuroeconomics, Miami, FL.*

**Hutcherson, C.A.**, Montaser-Kouhsari, L., & Rangel, A. (April, 2014). Neural correlates of emotional and utilitarian considerations in moral decision-making. *Talk presented at the 2014 meeting of the Social and Affective Neuroscience Society, Denver, CO.*

**Hutcherson, C.A.**, Sullivan, N. & Rangel, A. (February, 2014). Altruistic motives emerge later than selfish ones: tracking the online construction of generous choices. *Poster presented at the 2014 meeting of the Society for Personality and Social Psychology, Austin, TX.*

**Hutcherson, C.A.**, Montaser-Kouhsari, L., & Rangel, A. (November, 2013). Neural correlates of emotional and utilitarian considerations in moral tradeoffs. *Poster presented at the 2013 meeting of the Society for Judgment and Decision Making, Toronto, Canada.*

**Hutcherson, C.A.**, (November, 2013). Investigating the dynamics of reactivity and regulation of food choice using fMRI and computational modeling. *Talk given at the 2013 meeting of the Society for Neuroscience, San Diego, CA.*

**Hutcherson, C.A.** (April, 2013). Consciousness, self-control, and the brain. *Invited talk presented at the University of Delaware's Center for Science, Ethics, and Public Policy, Dover, DE.*

Stanley, D.A., **Hutcherson, C.A.**, Adolphs, R. (April, 2013). A novel paradigm for investigating the neural and computational mechanisms of Theory of Mind. *Poster presented at the 2013 meeting of the Social and Affective Neuroscience Society, San Francisco, CA.*

**Hutcherson, C.A.**, Bushong, B., Rabin, M., & Rangel, A. (October, 2012). Distinct neural computations support different motives for generosity. *Talk presented at the 2012 meeting of the Society for Neuroscience, New Orleans, LA.*

Stanley, D.A., **Hutcherson, C.A.**, & Adolphs, R. (October, 2012). A novel paradigm for investigating the neural and computational mechanisms of Theory of Mind. *Poster presented at the 2012 meeting of the Society for Neuroscience, New Orleans, LA.*

Pavlicek, B., **Hutcherson, C.A.**, & Plassmann, H. (September, 2012). Differences in dietary self-control and its psychological underpinnings. *Poster presented at the 2012 meeting of the Society for Neuroeconomics, Key Biscayne, FL.*

**Hutcherson, C.A.**, Bushong, B., Rabin, M., & Rangel, A. (June, 2012). Making decisions about others' welfare: neural measures reveal distinct motivations for altruistic choice. *Talk presented at the Paris School of Economics Workshop on Collective Decision Making, Paris, France.*

**Hutcherson, C.A.** (October, 2011). The neural basis of simple and complex choice. *Lecture given at University of California, San Diego, Cog Sci 200: Cognitive Sciences Seminar, San Diego, CA.*

**Hutcherson, C.A.**, Bushong, B., Rabin, M., & Rangel, A. (2010). Alternative neural mechanisms guide altruistic behavior. *Talk presented at the 2010 meeting of the Social and Affective Neuroscience Society, Chicago, IL.*

**Hutcherson, C.A.**, Plassmann, H., Gross, J.J., & Rangel, A. (2010). Cognitive modulation of stimulus values at the time of decision making. *Poster presented at the 2010 meeting of the Cognitive Neuroscience Society, Montreal, Quebec, Canada.*

**Hutcherson, C.A.**, & Rangel, A. (2009). Parallel reinforcement learning signals in the hippocampus and striatum guide acquisition of stimulus-outcome and stimulus-reward associations. *Talk presented at the 2009 meeting of the Society for Neuroeconomics, Evanston, IL.*

**Hutcherson, C.A.,** Plassmann, H., Gross, J.J., & Rangel, A. (2009). Cognitive modulation of goal values at the time of decision making. *Poster presented at the 2009 meeting of the Society for Neuroeconomics, Evanston, IL.*

**Hutcherson, C.A.,** & Rangel, A. (2009). Learning “What” and “How good”: Ventral striatum encodes both reward and identity prediction errors. *Poster presented at the 2009 meeting of the Organization for Human Brain Mapping, San Francisco, CA.*

**Hutcherson, C.A.,** & Rangel, A. (2009). “What” and “How Good”: Common and distinct neural mechanisms encode reward and identity prediction. *Poster presented at the 2009 meeting of the Cognitive Neuroscience Society, San Francisco, CA.*

**Hutcherson, C.A.,** Seppälä, E.M., & Gross, J.J. (2009). Selfless or Selfish: The neural correlates of compassion. *Poster presented at the 2009 meeting of the Society for Personality and Social Psychology, Tampa Bay, FL.*

**Hutcherson, C.A.,** Seppala, E.M., & Gross, J.J. (2008). Compassion, emotion, and meditation: From behavior to brain. *Invited talk presented at the 6<sup>th</sup> Annual Scientific Conference on Mindfulness, Worcester, MA.*

**Hutcherson, C.A.,** Goldin, P.R., Ramel, W., McRae, K., & Gross, J.J. (2007). Attention influences the relationship between personality, emotion, and neural response. *Poster presented at the 2007 meeting of the Organization for Human Brain Mapping, Chicago, IL.*

**Hutcherson, C.A.,** Seppala, E.M., & Gross, J.J. (2007). The effects of meditation on explicit and implicit interpersonal responding. *Poster presented at the 2007 meeting of the Society for Personality and Social Psychology, Memphis, TN.*

**Hutcherson, C.A.,** & Gross, J. J. (2006). Disgust, anger, and morality: A functionalist perspective. *Poster presented at the 2006 Society for Personality and Social Psychology Emotion Pre-conference, Palm Springs, CA.*

**Hutcherson, C. A.,** Pace-Schott, E. F., Bemporad, B., Stickgold, R., Kumar, A. & Hobson, J. A. (2002). Development of a repeatable battery of tests of prefrontal function for sleep deprivation studies. *Sleep, 25, 625 Suppl.*

## TEACHING

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**PSYC57H3. Cognitive Neuroscience of Decision Making** (University of Toronto Scarborough)

- Instructor (Student Evaluations: 4.3/5)

**PSYC13H3: Social Cognition** (University of Toronto Scarborough)

- Instructor (Student Evaluations: 4.1/5)



**Psych 70: Social Psychology** (Stanford, Spring 2008)

- Teaching Assistant (Student Evaluations: 4.8/5)

**Psych 104S: Affective Neuroscience** (Stanford, Summer 2006 & 2007)

- Co-Instructor (Student Evaluations: 4.6/5)

**Psych 114S: Personality and Individual Differences** (Stanford, Summer 2006 & 2007)

- Co-Instructor (Student Evaluations: 4.9/5)

**Psych 120/Bio 153: Cellular Neuroscience** (Stanford, Winter 2005, Fall 2007)

- Head Teaching Assistant

**Psych 1: Introductory Psychology** (Stanford, Fall 2005 & 2006, Spring 2006)

- Teaching Assistant

**Psych 50: Cognitive Neuroscience** (Stanford, Winter 2004)

- Teaching Assistant

**Psych 20: Brain and Behavior** (Stanford, Fall 2003)

- Teaching Assistant

**ASSOCIATION MEMBERSHIPS**

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*American Psychological Association**Association for Psychological Science**Cognitive Neuroscience Society**Neuroethics Society**Organization for Human Brain Mapping**Social and Affective Neuroscience Society**Society for Judgment and Decision-Making**Society for Neuroeconomics**Society for Neuroscience**Soc. for Personality and Social Psychology***AD HOC REVIEWER**

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*Cerebral Cortex**Cognitive, Affective, and Behavioral  
Neuroscience**Current Directions in Psychological  
Science**Emotion**Frontiers in Decision Neuroscience**Human Brain Mapping**Journal of Compassionate Healthcare**Journal of Experimental Psychology:  
General**Journal of Neuroscience**Journal of Neurophysiology**Journal of Personality and Social  
Psychology**Memory and Cognition**Mindfulness**Nature Human Behavior*

*Neurobiology of Stress*  
*Neuroimage*  
*Neuropsychologia*  
*Organizational Behavior and Human  
Decision Processes*  
*Philosophical Psychology*  
*PLOS One*  
*PLOS Computational Biology*  
*PNAS*  
*Psychological Science*

*Social and Personality Psychology  
Compass*  
*Social Cognitive and Affective  
Neuroscience*  
*Social Psychological and Personality  
Science*  
*Personality and Social Psychology Review*  
*Social Theory and Health*  
*Spanish Journal of Psychology*  
*Trends in Cognitive Sciences*

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