LUKE E. MILLER

Curriculum Vitae
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Address

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Academic Positions

2015 – present	Postdoctoral Scholar, CRNL INSERM U1028 Imp*Act* team Advisor: Alessandro Farnè

Education

2010 – 2015	Ph.D. in Cognitive Science; University of California, San Diego Dissertation: *The Body in Flux: Tool Use Modulates Multisensory Representations of the Body* Advisor: Ayse Pinar Saygin
2005 – 2009	B.A. in Behavioral Neuroscience; Purdue University Honors Thesis: *Semantic processing of action verbs in Parkinson's disease patients* Advisor: David Kemmerer

Fellowships

2017 – 2019	Postdoctoral Fellowship, Fondation pour la Recherche Médicale *Sensing the world through tools and prosthetics*
2014 – 2015	NIMH Predoctoral Fellowship in Cognitive Neuroscience, Institute for Neural Computation.
2010 – 2013	Jerri-Ann and Gary E. Jacobs Endowed Fellowship

Research Grant

Sigma Xi Grants-in-Aid of Research (PI) *The Neural Mechanisms Underlying Tool Embodiment: An ERP Investigation*	01/2014 – 12/2014 $ 1,000
KIBM UCSD, Innovative Research Program (Co-PI) *Cortical Plasticity of Body Representations Following Tool Use*	06/2011 – 06/2013 $ 30,122

Peer-Reviewed Articles (Scopus citation count = 182; H-Index = 7)

1. **Miller, LE.,** Montroni, L., Koun, E., Salemme, R., Hayward, V., Farnè, A. (2018). Sensing with tools extends somatosensory processing beyond the body. *Nature.* 561(7722): 239-243
2. Weil, RS., … **Miller, LE.,** (8/16) … Morris, H. (2018). Assessing cognitive dysfunction in Parkinson's disease: An online tool to detect visuo-perceptual deficits. *Movement Disorders.* 33(4): 544-553,
3. **Miller, LE.**, Cawley-Bennet A., Longo, MR., Saygin, AP. (2017) The recalibration of tactile perception during tool use is body-part specific. *Experimental Brain Research*. 235(10): 2917-26
4. **Miller, LE.**, Longo, MR., Saygin, AP. (2017) Visual illusion of tool use recalibrates tactile perception. *Cognition*. 128(2): 140-48
5. **Miller, LE.**, Farnè, A. (2016). Losing self control. *eLife* [Insight]
6. **Miller, LE.**, Longo, MR., Saygin, AP. (2016). Mental body representations retain homuncular shape distortions: Evidence from Weber's illusion. *Consciousness and Cognition.* 40:17-25
7. Urgen, BA. & **Miller, LE.** (2015). Towards and empirically grounded predictive coding account of action understanding. *Journal of Neuroscience* [Journal Club]
8. Li, AX., Florendo, M., **Miller, LE.**, Ishiguro, H., Saygin, AP. (2015). Robot form and motion influences social attention. *IEEE Human-Robot Interaction*. 43-50.
9. **Miller, LE.**, Longo, MR., Saygin, AP. (2014). Tool morphology constrains the effects of tool use on body representations. *Journal of Experimental Psychology: Human Perception and Performance.* 40(6): 2143-53
10. Troyer, M., Curley, LB., **Miller, LE.**, Saygin, AP., Bergen, BK. (2014). Processing of motion verbs in metaphorical and literal sentences is modulated by the semantic match of visual biological motion primes. *Frontiers in Human Neuroscience. 8.*
11. **Miller, LE.**, Saygin, AP. (2013). Individual differences in the perception of biological motion: Links to social cognition and motor imagery. *Cognition*. 128(2):140-8

12. Brang, D., **Miller, LE.**, McQuire, M., Ramachandran, VS., Coulson, S. (2013). Enhanced mental rotation ability in time-space synesthesia, contrasted with normal visuo-spatial working memory. *Cognitive Processing.* 14(4): 429-34

13. Kemmerer, D., **Miller, LE.**, MacPherson, MK., Huber, JE., Tranel, D. (2013). Intact action-verb processing in Parkinson's Disease patients: Implications for embodied semantics. *Frontiers in Human Neuroscience.* 7.

14. Ramachandran, VS., **Miller, LE.**, Livingstone, M., Brang, D. (2012). Colored halos around faces and emotion-evoked colors. A new form of synesthesia. *NeuroCase.* 18(4): 352-8

15. Brang, D., Teuscher, U., **Miller, LE.,** Ramachandran, VS., Coulson, S. (2011). Handedness and calendar orientations in time-space synesthesia. *Journal of Neuropsychology*. 5(2): 323-32

Book Chapters

1. Saygin, AP., **Miller, LE**. (2013). Auditory Agnosias. Disorders of Peripheral and Central Auditory Processing. Elsevier.

Manuscripts Submitted and in Preparation

1. **Miller, LE.,** Longo, MR., Saygin, AP. (*submitted*). Tool use modulates somatosensory cortical processing.

2. **Miller, LE.,** Ravenda, V., Fabio, C., Salemme, R., Bognini, N., Hayward, V., Farnè, A. (in prep). Neural dynamics of tool-extended sensing.

3. **Miller, LE.,** Fabio, C., Salemme, R., Hayward, V., Farnè, A. (in prep). Alpha oscillations map touch in a tool-centered spatial representation.

4. **Miller, LE.,** Saygin, AP., Longo, MR. (in prep). Somatosensory body maps mirror the elasticity of skin.

5. **Miller, LE.,** Salemme, R., Hayward V., Farnè, A. (in prep). Tool-extended sensing activates multiple sensory-motor reference frames in parallel.

6. **Miller, LE.,** Kadambi, A., Pham, A., Carmel, D., Saygin, AP. (in prep). Continuous flash suppression reveals a novel stage of biological motion processing.

Selected Talks

June, 2018. Two sides of tool embodiment. Symposium at the International Multisensory Research Forum. *Toronto, Canada.*

October, 2016. Feeling touch on a hand-held tool. Bodily sensations and bodily awareness workshop. *Paris, France.*

May, 2015. Vision plays a critical role in recalibrating tactile perception during tool use. Vision Sciences Society. *St. Pete's Beach, FL; USA*.

May, 2014. The role of vision in tool embodiment. Kavli Institute for Brain and Mind Symposium. *San Diego, CA; USA.*

June, 2014. Tool use modulates multiple levels of body representation. Max Planck Institute for Biological Cybernetics. *Tübingen, Germany.*

November, 2013. Visual feedback constrains representational plasticity following tool use. Society for Neuroscience. *San Diego, CA; USA*

July, 2013. Tool use modulates both conscious and unconscious representations of the body. Association for the Scientific Study of Consciousness. *San Diego, CA; USA.*

May, 2013. Plasticity of Body Representations Following Tool Use. Kavli Institute for Brain and Mind Symposium*. San Diego, CA; USA.*

Conference Posters

1. **Miller, LE.,** Fabio, C., Salemme, R., Hayward V., Farnè, A. (2018). Neural dynamics of tool-extended sensing. *Hand, Brain and Technology 2018; Ascona, Switzerland.* August, 2018.
2. **Miller, LE.,** Montroni, L., Salemme, R., Hayward V., Farnè, A. (2017). Sensing the world with a hand-held tool. *International Multisensory Research Forum; Nashville, TN.* May, 2017.
3. **Miller, LE.,** Montroni, L., Salemme, R., Hayward V., Farnè, A. (2017). Sensing the world with a hand-held tool. *Neural Control of Movement; Dublin, Ireland.* April, 2017.
4. Kadambi, A., Pham, A., **Miller, LE.,** Carmel, D., Saygin, AP. (2015). The processing of biological form and motion does not depend on conscious awareness *Vision Sciences Society; St. Pete's Beach, FL.* May, 2015
5. **Miller, LE.,** Longo, MR., Saygin, AP. (2014). Vision is sufficient to incorporate a tool into mental body representations. *Psychonomics; Long Beach, CA.* November, 2014
6. **Miller, LE.,** Longo, MR., Saygin, AP. (2014). Vision during tool use is sufficient to recalibrate tactile perception. *International Multisensory Research Forum; Amsterdam, The Netherlands.* June, 2014
7. **Miller, LE.,** Carmel, D., Saygin, AP. (2014). Breaking Bio: Does biological motion have preferential access to awareness? *Vision Sciences Society; St. Pete's Beach, FL.* May, 2014

8. Florendo, M., **Miller, LE**., Cooke, J., Saygin, AP. (2014). The influence of (biological) form on biological motion. *Vision Sciences Society; St. Pete's Beach, FL.* May, 2014

9. Li, A., Florendo, M., **Miller, LE.,** Saygin, AP. (2014). The effect of form and motion in reflexive orienting. *Vision Sciences Society; St. Pete's Beach, FL.* May, 2014

10. **Miller, LE.,** Longo, MR., Saygin, AP. (2013). Tool use modulates a conscious representation of body shape: Implications for the plasticity of self-representation. *Aegina Summer School.* June, 2013

11. **Miller, LE.,** Longo, MR., Saygin, AP. (2012). Morphological constraints modulate tool-induced plasticity. *Cognitive Neuroscience Society; San Francisco, CA.* April, 2013

12. **Miller, LE.,** Longo, MR., Saygin, AP. (2012). Plasticity to the body model following brief use of a hand-shaped tool. *Society for Neuroscience; New Orleans, LA.* October, 2012

13. **Miller, LE.,** Saygin, AP. (2012). Intersubject variability in the use of form and motion cues during biological motion perception. *Vision Sciences Society; Naples, FL.* May, 2012

14. **Miller, LE.,** Seckel, E., Ramachandran, VS. (2010). Face-color and emotion-color: Two new forms of synesthesia tested objectively. *Society for Neuroscience Meeting; San Diego, CA*. November, 2010.

15. **Miller, L.E**., Huber, J.E., MacPherson, M. K., Kemmerer, D. (2009). Comprehension of Action and Non-Action Verbs in Preserved in Parkinson's Disease. *Paper presented at the Midwestern Psychological Association annual meeting; Chicago, IL*. April, 2009.

16. Kemmerer, D., **Miller, L.E.**, Huber, J.E., MacPherson, M. K. (2009). Comprehension of Action and Non-Action Verbs in Preserved in Parkinson's Disease. *Paper presented at the 16th annual Cognitive Neuroscience Society Meeting; San Francisco, CA.* March, 2009.

Supervising Experience

Masters Students, CRNL ImpAct Team
Luca Montroni (Thesis project co-supervised with Alessandro Farnè)
Cécile Fabio (Thesis project co-supervised with Alessandro Farnè)
Valeria Ravenda (Thesis project co-supervised with Alessandro Farnè & Nadia Bolognini)

Research Mentor, CRNL ImpAct Team
Three undergraduate research assistants

Research Mentor, Department of Cognitive Science, UCSD
15 undergraduate research assistants, including two honors theses.

Professional Societies

Society for Neuroscience (2010 – Present)
Vision Sciences Society (2011 – 2016)
American Psychological Association (2012 – Present)
International Multisensory Research Forum (2013 – Present)
Neural Control of Movement (2017 – Present)
Cognitive Neuroscience Society (2013 – 2015)

Teaching Experience

Instructor, Department of Cognitive Science, UCSD
Brain Disorders and Cognition: WI 2015

Teaching Assistant, Department of Cognitive Science, UCSD
Matlab for Experimental Research: FA 2013, FA 2014
Analogy and Conceptual Systems: SU 2012, SU 2013
Brain Disorders and Cognition: WI 2012, WI 2013
Distributed Cognition: FA 2011, FA 2012
Cognitive Neuroscience: SP 2011
Introduction to Cognitive Science: WI 2011

Ad Hoc Reviewing

Brain and Cognition
Cognition
Developmental Science
Experimental Brain Research
Frontiers in Human Neuroscience
Frontiers in Integrative Neuroscience
Frontiers in Psychology
NeuroCase
NeuroImage
Neuroscience
PLoS One
Psychological Research
Psychonomic Bulletin & Review
Quarterly Journal of Exp Psychology
Scientific Reports