

## CURRICULUM VITAE

### Diane M. Beck

The Beckman Institute  
405 North Mathews Avenue  
University of Illinois, Urbana-Champaign  
Urbana, IL 61801

Department of Psychology  
603 East Daniel Street  
University of Illinois, Urbana-  
Champaign  
Champaign, IL 61820

Phone: (217) 244-1118  
Fax: (217) 244-8371  
Email: [dbeck@illinois.edu](mailto:dbeck@illinois.edu)

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**Citizenship** USA and New Zealand

**Education**

1998	Ph.D.	University of California, Berkeley; Cognitive Psychology Advisor: Stephen Palmer Thesis: Strategy Effects in Perceptual Grouping
1994	M.A.	University of California, Berkeley; Cognitive Psychology
1991	B.A.	University of California, Irvine; <i>Cum Laude</i> in Psychology

**Academic Appointments**

2017-present	Professor, Department of Psychology University of Illinois at Urbana-Champaign
2011-2017	Associate Professor, Department of Psychology University of Illinois at Urbana-Champaign
2005-2011	Assistant Professor, Department of Psychology University of Illinois at Urbana-Champaign
2002-2005	Research Associate at Princeton University
1999-2002	Postdoctoral Research Fellow at University College London

**Research Support**

Ongoing

Co-PI (Co-Directing with PI Li), Office of Naval Research (ONR) Multidisciplinary University Initiative (MURI), N000141410671, *Top-Down and Bottom-Up Visual Mechanisms at Multiple Spatial and Temporal Scales: Experimental Investigation and Computational Modeling, 2014-2020* (PI, Fei-Fei Li; Co-PIs, James DiCarlo, Jack Gallant, Jitendra Malik, Mary Peterson)  
Renewed 2021-2022

Co-PI, NSF, *Females of Vision, et al (FoVea): Enhancing the Success, Visibility, and Impact of Women in Vision Science, 2019-2022*, (PI, Mary Peterson; Co-PIs, Karen Schloss).

Completed

Co-PI, NSF, *Enhancing the Success of Women in Vision Science: Females of Vision, et al. (FoVea), 2016-2020*, (PI, Mary Peterson; Co-PIs, Karen Schloss).

PI, NIH grant, R01EY022605, *Investigating Frontoparietal and Occipitotemporal Contributions to Awareness, 2013-2017* (Co-PIs, Gabriele Gratton, Monica Fabiani and Kyle Mathewson)

PI, NIH, R03 MH082012 A, *The Neural Bases of Perceptual Capacity Limitations, 2007-09*

PI, Critical Research Initiative Planning Grant, University of Illinois, *Pattern Recognition and Mind Reading: An Emerging Field, 2006-2007*

Co-PI, NIH equipment grant, 1 S10 RR029294, *Diffusive Optical Tomography (DOT) at the Biomedical Imaging Center, 2010-2011* (PI, Gabriele Gratton)

Co-PI, NIH grant, R01EY019429, *CRCNS: fMRI Pattern Analysis of Neural Correlates of Natural Scene Categories, 2008-2013* (PI and Co-PI, Fei-Fei Li and Dirk Bernhardt-Walther)

Core faculty, NIH training grant, T32 MH019554, *Training in Cognitive Psychophysiology*, 2008-2013 (PD, Wendy Heller)

PI, Campus Research Board, University of Illinois, *What brain processes determine awareness? Using optical imaging and binocular rivalry to probe changes in visual awareness*, 2012-2013

**Academic  
Honors and  
Affiliations**

Elected Society of Experimental Psychology Fellow (2019)

Elected Association for Psychological Science (APS) Fellow (2018)

Charles W. Erickson Professorial Scholar (2018)

University of Illinois: Campus Distinguished Promotion Award (2017)

Mabel Kirkpatrick Hohenboken Teaching Enhancement Award (2014)

University of Illinois Teachers Ranked as Excellent: Spring, 2007, Fall 2007, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Spring 2012, Fall 2012, Fall 2013 (top 10%), Spring 2014, Fall 2014, Spring 2015, Fall 2016, Spring 2017, Fall 2019, Spring 2021

Elected member of *Gesellschaft für Unendliche Versuche* (2009)

Phi Beta Kappa (1991)

*Cum Laude* in Psychology, University of California Irvine (1991)

Member of Association for Psychological Science

Member of Cognitive Neuroscience Society

Member of Society for Neuroscience

Member of Vision Sciences Society

**Professional  
Activities**

Interim Head of Psychology, Psychology Department, University of Illinois, Urbana-Champaign, 2022-present

Associate Head and Director of Graduate Studies, Psychology Department, University of Illinois, Urbana-Champaign, 2021-present

“Biologically-inspired Artificial Intelligence” Group Leader, Beckman Institute for Advanced Science & Technology, University of Illinois, 2021- present

Assistant Head of Information and Communications, Psychology Department, University of Illinois, Urbana-Champaign, 2019-2021

Attention and Perception Program Area Coordinator, Psychology Department, University of Illinois, 2019-2021

Co-Editor for Volume on “Knowledge and Vision” (Psychology of Learning and Motivation series), 2018-2019

Intelligent Systems (Major Research Theme) Co-Chair, Beckman Institute, University of Illinois, 2018-present

Beckman Institute Executive Committee, University of Illinois, 2018-present

Journal of Vision, Editorial Board, 2018-present

Member of Committee to Establish a Brain & Cognitive Science Undergraduate Major, 2017-present

Member of the College of Liberal Arts & Sciences Senior Women Faculty Advisory Group, U.

of Illinois, 2017-present

VSS Abstract Review Committee, 2016-present

Beckman Institute Director Search Committee, U. of Illinois, 2016-17

Vice-Chair of Social Behavioral Research Institutional Review Board, University of Illinois, Urbana-Champaign, Fall 2016-present

“Mechanisms of Cognitive Control” Group Leader, Beckman Institute for Advanced Science & Technology, 2016- 2021

NIH Grant Writing Series Mentor, Interdisciplinary Health Sciences Initiative, University of Illinois, Urbana-Champaign, 2016-2018

Member of Social Behavioral Research Institutional Review Board, University of Illinois, Urbana-Champaign, Fall 2014-2016

Founding organizer of Females of Vision et al. (FoVea), 2016-present

Guest Editor for Special Issue of Pattern Recognition: “Machine Learning and Pattern Recognition Models for Change Detection”, 2015

Program Advisory Committee, Beckman Institute for Advanced Science & Technology, 2013-2017

Psychology Advisory Committee, 2013-2016

Cognitive Neuroscience Division Coordinator, Psychology, Fall 2014-2016

Visiting Scholar at Caltech in Electrical Engineering, Spring 2013

Visiting Professor (CooperInt), University of Verona, Summer 2012

Cognitive Neuroscience Group Leader, Beckman Institute for Advanced Science & Technology, 2011- 2016

Neuroscience Program, University of Illinois, 2005-present

Ad Hoc Reviewer for:

*Attention, Perception, & Psychophysics*

*Brain Research*

*Cerebral Cortex*

*Cognition*

*Cognitive, Affective, & Behavioral*

*Neuroscience*

*Cognitive Neuroscience*

*Cognitive Neuropsychology*

*Cognitive Psychology*

*Consciousness & Cognition*

*Cortex*

*eNeuro*

*eLife*

*Human Brain Mapping*

*Journal of Cognitive Neuroscience*

*Journal of Experimental Psychology: General*

*Journal of Experimental Psychology: Human*

*Perception & Performance*

*Frontiers in Aging Neuroscience*

*Frontiers in Human Neuroscience*

*Frontiers in Psychology*

*Nature Human Behaviour*

*NeuroImage*

*Neuropsychologia*

*Perception and Psychophysics*

*PLoS Biology*

*Proceedings of the National Academy of*

*Sciences*

*Psychonomic Bulletin and Review*

*Psychological Science*

*Psychophysiology*

*Scientific Reports*

*Visual Cognition*

National Science Foundation

National Security Science and

Engineering Faculty Fellowship

(NSSEFF)

Netherlands Organisation for Scientific

Research (NWO) Vidi grant

U. of Illinois, Campus Research Board

Wellcome trust/DBT India Alliance

## Publications

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### Peer Reviewed Articles

1. Center, E.G., Gephart, A.M., Yang, P.-L., & Beck, D.M. (2022). Typical Viewpoints of Objects are Better Detected than Atypical Ones. *Journal of Vision*
2. Cunningham, E. Wang, R. & Beck, D.M. (2022). Effects of rhythmic auditory stimulation on vision: oscillations in performance can be enhanced, but not induced. *Journal of Experimental Psychology: Human Perception and Performance*, 48(11), 1153-1171.  
<https://doi.org/10.1037/xhp0001029>
3. Clements, G. M., Gyurkovics, M., Low, K. A., Beck, D. M., Fabiani, M., & Gratton, G. (2022). Dynamics of alpha suppression and enhancement may be related to resource competition in cross-modal cortical regions. *NeuroImage*, 252, 119048.  
<https://doi.org/10.1016/j.neuroimage.2022.119048>
4. Kumar, M. K., Federmeier, K. D., & Beck, D. M. (2021). The N300: An Index For Predictive Coding Of Complex Visual Objects and Scenes, *Cerebral Cortex Communications*, 2(2),  
<https://doi.org/10.1093/texcom/tgab030>
5. Chiu, Y-C, Wang, T.W. Beck, D.M. Lewis-Peacock, J.A., & Sahakyan, L. (2021). Separation of Item and Context in Item-Method Directed Forgetting, *NeuroImage*, 235, 117983.  
<https://doi.org/10.1016/j.neuroimage.2021.117983>
6. Metzger, B. A., & Beck, D. M. (2020). Probing the mechanisms of probe-mediated binocular rivalry. *Vision Research*, 173, 21-28. <https://doi.org/10.1016/j.visres.2020.04.011>
7. Center, E. G., Knight, R., Fabiani, M., Gratton, G., & Beck, D. M. (2019). Examining the role of feedback in TMS-induced visual suppression: A cautionary tale. *Consciousness and Cognition*, 75, 102805. <https://doi.org/10.1016/J.CONCOG.2019.102805>
8. Michel, M., Beck, D., Block, N., Blumenfeld, H., Brown, R., Carmel, D., ... Yoshida, M. (2019). Opportunities and challenges for a maturing science of consciousness. *Nature Human Behaviour*, 3(2), 104–107. <http://doi.org/10.1038/s41562-019-0531-8>
9. Groen, I.A., Greene, M.R., Baldassano, C., Fei-Fei, L., Beck, D.M., Baker, C. (2018). Distinct contributions of functional and deep neural network features to representational similarity of scenes in human brain and behavior. *Elife* 2018;7:e32962 DOI: 10.7554/eLife.32962
10. Kumar, M. K., Federmeier, K. D., Fei-Fei, L., & Beck, D. M. (2017). Evidence For Similar Patterns of Neural Activity Elicited by Picture- and Word-based Representations of Natural Scenes. *NeuroImage*, 155, 422-436. doi: 10.1016/j.neuroimage.2017.03.037.
11. Wang, Z., Liu, D. Chang, S., Dolcos, F., Beck, D and Huang, T. (2017). Image Aesthetics Assessment using Deep Chatterjee's Machine. *2017 International Joint Conference on Neural Networks (IJCNN)*, Anchorage, AK, 2017, pp. 941-948.
12. Metzger, B.A., Mathewson, K.E., Tapia, E., Fabiani, M., Gratton, G., Beck, D.M. (2017). Regulating the access to awareness: Brain activity related to probe-related and spontaneous reversals in binocular rivalry. *Journal of Cognitive Neuroscience*, 29(6):1089-1102. doi: 10.1162/jocn\_a\_01104.
13. Caddigan, E., Choo, H., Fei-Fei, L., & Beck, D.M (2017). Categorization influences detection: A Perceptual Advantage for Representative Exemplars of Natural Scene Categories. *Journal of Vision*, 17(1):21. doi: 10.1167/17.1.21.

14. Baldassano, C., Beck, D.M., Fei-Fei, L. (2017). Human-object interactions are more than the sum of their parts. *Cerebral Cortex*, 27(3):2276-2288. doi: 10.1093/cercor/bhw077.
15. Baldassano, C., Esteva, A., Fei-Fei, L., Beck, D.M. (2016). Two distinct scene processing networks connecting vision and memory. *eNeuro*, 3(5). pii: ENEURO.0178-16.2016.
16. Baldassano, C., Fei-Fei, L., Beck, D.M., (2016). Pinpointing the peripheral bias in neural scene processing networks during natural viewing. *Journal of Vision*, 16(2):9. doi: 10.1167/16.2.9.
17. Iordan, M.C., Greene, M.R., Beck, D.M. , & Fei-Fei, L. (2016). Typicality Sharpens Category Representations in Object- Selective Cortex. *Neuroimage*, 134:170-9.
18. Clevenger, J. & Beck, D.M. (2016). The Folly of Boxology. *Behavioral & Brain Sciences*, 39.
19. Greene, M.R., Baldassano, C., Beck, D.M , Fei-Fei, L. (2016) Visual Scenes are Categorized by Function. *Journal of Experimental Psychology: General*, 145(1),82-94.
20. Parks, N.A, Mazzi, C., Tapia, E., Savazzi, S., Fabiani, M., Gratton, G., & Beck, D.M. (2015). The Influence of Posterior Parietal Cortex on Extrastriate Visual Activity: A Concurrent TMS and Fast Optical Imaging Study. *Neuropsychologia*, 78, 153-8.
21. Greene, M.R., Botros, A.P., Beck, D.M , Fei-Fei, L. (2015) What You See is What You Expect: Rapid Scene Understanding Requires Prior Experience. *Attention, Perception, & Psychophysics*, 77, (4), 1239-1251.
22. Iordan, M.C., Greene, M.R., Beck, D.M., Fei-Fei, L. (2015). Basic Level Category Structure Emerges Gradually Across Human Ventral Visual Cortex. *Journal of Cognitive Neuroscience*, 27(7),1427-46.
23. Baldassano, C., Beck, D.M., & Fei-Fei, L. (2015). Parcellating connectivity in spatial maps. *PeerJ*, 3:e784 <http://dx.doi.org/10.7717/peerj.784>.
24. Bouchaffra, D., Cheriet, M., Jodoin, P. M., & Beck, D. (2015). Machine learning and pattern recognition models in change detection. *Pattern Recognition*, 3(48), 613-615. (Guest Editor, Special Issue)
25. Clevenger, J. & Beck, D.M. (2014): Refining the resource model: Cortical competition could explain hemifield independence, *Visual Cognition*, 22, 1022-1026.
26. Tapia, E. & Beck, D.M. (2014). Probing feedforward and feedback contributions to awareness with visual masking and transcranial magnetic stimulation. *Frontiers in Psychology*, 5: 01173. doi: 10.3389/fpsyg.2014.01173
27. Michal, A.G., Lleras, A., & Beck, D.M. (2014). Relative contributions of task-relevant and task-irrelevant dimensions in priming of popout. *Journal of Vision*, 14(12). pii: 14. doi: 10.1167/14.12.14.
28. Scalf, P.E., Ahn, J.W., Beck, D.M. & Lleras, A. (2014) Trial history effects in the ventral attentional network. *Journal of Cognitive Neuroscience*, 26(12):2789-97.
29. Mathewson, K.E., Beck, D.M., Ro, T., Maclin, E.L., Low, K.A., Fabiani, M., & Gratton, G. (2014). Dynamics of Alpha Control: Preparatory Suppression of Posterior Alpha Oscillations by Frontal Modulators Revealed with Combined EEG and Event-related Optical Signal. *Journal of Cognitive Neuroscience*, 26, 2400-15.
30. Tapia, E., Mazzi, C., Savazzi, S., & Beck, D.M. (2014). Phosphene-guided transcranial magnetic stimulation of occipital but not parietal cortex suppresses stimulus visibility. *Experimental Brain Research*, 232, 1989–1997.
31. Lavie, N., Beck, D.M., & Konstantinou (2014). Blinded by the load: attention, awareness and the

role of perceptual load. *Philosophical Transactions of the Royal Society B*, 369: 20130205.  
<http://dx.doi.org/10.1098/rstb.2013.0205>

32. Beck, D.M., Emanuele, B., Savazzi, S. (2013). A new illusion of height and width: taller people are perceived as thinner. *Psychonomic Bulletin & Review*, 20, 1154-60.
33. Parks, N.A., Beck, D.M., Kramer, A.F. (2013) Enhancement and suppression in the visual field under perceptual load. *Frontiers in Psychology*, 4:275. doi: 10.3389/fpsyg.2013.00275 (*Special Issue: Early and late selection: Effects of load, dilution and salience*)
34. Scaf, P.E., Torralbo, A., Tapia, E., Beck, D.M. (2013). Competition explains limited attention and perceptual resources: implications for perceptual load and dilution theories. *Frontiers in Psychology*, 4:243. doi: 10.3389/fpsyg.2013.00243. (*Special Issue: Early and late selection: Effects of load, dilution and salience*)
35. Baldassano, C., Beck, D.M., Fei-Fei, L. (2013). Differential Connectivity Within the Parahippocampal Place Area. *NeuroImage*, 75, 236-245.
36. Torralbo, A., Walther, D., Chai, B., Caddigan, E., Fei-Fei, L., Beck, D.M. (2013). Good exemplars of natural scene categories elicit clearer patterns than bad exemplars but not greater BOLD activity. *PLoS ONE*, 8(3): e58594. doi:10.1371/journal.pone.0058594
37. Mathewson, K.E., Prudhomme, C., Fabiani, M., Beck, D.M., Lleras, A., Gratton, G. (2012). Making waves in the stream of consciousness: Entraining oscillations in EEG Alpha and fluctuations in visual awareness with rhythmic visual stimulation. *J. of Cognitive Neuroscience*, 24, 2321-33.
38. Baldassano, C., Jordan, M.C., Beck, D.M., Fei-Fei, L. (2012). Voxel-Level Functional Connectivity using Spatial Regularization. *NeuroImage*, 63, 1099-1106.
39. Lustig, A.G. & Beck, D.M. (2012). Task-relevant and task-irrelevant dimensions are modulated independently at a task-irrelevant location. *Journal of Cognitive Neuroscience*, 24, 1884-95.
40. Savazzi, S., Emanuele, B., Scaf, S. & Beck, D. (2012). Reaction times and perceptual adjustments are sensitive to the illusory distortion of space. *Experimental Brain Research*, 218, 119-28.
41. Parks, N.A., Maclin, E.L., Low, K.A., Beck, D.M., Fabiani, M., & Gratton, G. (2012). Examining cortical dynamics and connectivity with simultaneous single-pulse transcranial magnetic stimulation and fast optical imaging. *NeuroImage*, 59, 2504-10.
42. Walther, D.B., Chai, B., Caddigan, E., Beck, D.M. & Fei-Fei, L. (2011). Simple line drawings suffice for functional MRI decoding of natural scene categories. *Proceedings of the National Academy of Sciences*, 108, 9661-6.
43. Scaf, P.E., Basak, C. & Beck, D. M. (2011). Attention does more than modulate suppressive interactions: attending to multiple items. *Experimental Brain Research*, 212, 293-304.
44. Mathewson, K.E., Lleras, A., Beck, D.M., Fabiani, M., Ro, T., & Gratton, G. (2011). Pulsed Out of Awareness: EEG Alpha oscillations represent a pulsed inhibition of ongoing cortical processing. *Frontiers in Psychology*, 2:99. doi: 10.3389/fpsyg.2011.00099
45. Caddigan, E., Walther, D.B., Fei-Fei, L., Beck, D.M. (2010) Perceptual Differences between Natural Scene Categories. *Visual Cognition*, 18, 1498-1501.
46. Beck, D.M. (2010). The appeal of the brain in the popular press. *Perspectives on Psychological Science*, 5, 762-766.
47. Scaf, P.E. & Beck, D. M. (2010). Competition in visual cortex impedes attention to multiple items. *Journal of Neuroscience*, 30, 161-169.

48. Mathewson, K.E., Fabiani, M., Gratton, G., Beck, D.M., & Lleras, A. (2010). Making waves in the stream of consciousness: Eliciting predictable oscillations in visual awareness with pretarget entrainment at 12 Hz. *Visual Cognition*, 18, 137-141.
49. Mathewson, K.E., Fabiani, M., Gratton, G., Beck, D.M., & Lleras, A. (2010). Rescuing stimuli from invisibility: Inducing a momentary release from visual masking with pre-target entrainment. *Cognition*, 115, 186-191.
50. Yao, B., Walther, D.B., Beck, D.M. & Fei-Fei, L. (2009). Discovering and Modeling Interactions Between Brain Regions with Hidden Conditional Random Fields. In Y. Bengio, D. Schuurmans, J. Lafferty, C. K. I. Williams & A. Culotta (Eds.), *Advances in Neural Information Processing System 22* [<http://books.nips.cc/nips22.html>]
51. Chai, B., Walther, D.B., Beck, D.M. & Fei-Fei, L. (2009). Exploring Functional Connectivities of the Human Brain using Multivariate Information Analysis. In Y. Bengio, D. Schuurmans, J. Lafferty, C. K. I. Williams & A. Culotta (Eds.), *Advances in Neural Information Processing System 22* [<http://books.nips.cc/nips22.html>]
52. Walther, D.B., Caddigan, E., Fei-Fei, L., & Beck, D.M. (2009). Natural Scene Categories Revealed in Distributed Patterns of Activity in the Human Brain. *Journal of Neuroscience*, 29, 10573-81.
53. Beck, D. M. & Kastner, S. (2009). Top-down and bottom-up mechanisms in biasing competition in the human brain. *Vision Research*, 49, 1154-65.
54. Mathewson, K., Gratton, G., Fabiani, M., Beck, D.M., & Ro, T. (2009). To See or Not to See: Pre-stimulus Alpha Phase Predicts Visual Awareness. *Journal of Neuroscience*, 29, 2725-32.
55. Torralbo, A. & Beck, D. (2008) Defining perceptual load: The role of local competitive interactions in visual cortex. *Visual Cognition*, 16, 1131-1134.
56. Torralbo, A. & Beck, D. M. (2008) Perceptual load-induced selection as a result of competitive interactions in visual cortex. *Psychological Science*, 19, 1045-50.
57. Palmer, S.E. and Beck, D.M. (2007). The Repetition Discrimination Task: An Objective Method for Studying Perceptual Grouping. *Perception & Psychophysics*, 69, 68-78.
58. Beck, D. M., & Kastner, S. (2007). Stimulus similarity modulates competitive interactions in human visual cortex. *Journal of Vision*, 7(2):19, 1-12
59. Beck, D. M., Muggleton, N., Walsh, V., & Lavie, N. (2006). Right Parietal Cortex Plays a Critical Role in Change Blindness. *Cerebral Cortex*, 16, 712-7.
60. Beck, D. M., Pinsk, M. A. & Kastner, S. (2005). Symmetry perception in humans and macaques. *Trends in Cognitive Sciences*, 9, 405-406.
61. Beck, D. M. & Kastner, S. (2005). Stimulus context modulates competition in human extrastriate cortex. *Nature Neuroscience*, 8, 1110-1116.
62. Beck, D.M. and Lavie, N. (2005). Look here but ignore what you see: effects of distractors at fixation. *Journal of Experimental Psychology: Human Perception and Performance*, 31, 592-607.
63. Beck, D. M. & Palmer, S. E. (2002). Top-Down influences on Perceptual Grouping. *Journal of Experimental Psychology: Human Perception and Performance*, 28, 1071-1084.
64. Prinzmetal, W., Ivry, R. B., Beck, D.M., & Shimizu, N. (2002). A Measurement Theory Of Illusory Conjunctions. *Journal of Experimental Psychology: Human Perception and Performance*, 28, 251-269.
65. Beck, D. M., Rees, G., Frith, C. D. & Lavie, N. (2001). Neural correlates of change detection and

change blindness. *Nature Neuroscience*, 4, 645-650.

66. Prinzmetal, W., & Beck, D.M. (2001). The tilt constancy theory of visual illusions. *Journal of Experimental Psychology: Human Perception and Performance*, 27, 206-217.
67. Ehrlich, S.M., Beck, D.M., Crowell, J.A., Freeman, T.C.A., & Banks, M.S. (1998). Depth Information and Perceived Self-Motion during Simulated Gaze Rotations. *Vision Research*, 38, 3129-3145.
68. Friedrich, F.J., Egly, R., Rafal, R.D., & Beck, D. (1998). Spatial Attention Deficits in Humans: A Comparison of Superior Parietal and Temporal-Parietal Junction Lesions. *Neuropsychology*, 12, 193-207.
69. Palmer, S. E., Neff, J., & Beck, D. (1996). Late Influences on Perceptual Grouping: Amodal Completion. *Psychonomic Bulletin & Review*, 3(1), 75-80.
70. Beck, D. M., & Federmeier, K. D. (2019). *Knowledge and Vision* (Vol. 70). Academic Press.
71. Jordan, M.C., Joulin, A., Beck, D.M. , & Fei-Fei, L. (2015). Locally-Optimized Inter-Subject Alignment of Functional Cortical Regions. *Proceedings of the Machine Learning and Interpretation in Neuroimaging (MLINI) Workshop, NIPS 2015*
72. Beck, D. M. & Kastner, S. (2014). Neural systems for spatial attention in the human brain: Evidence from neuroimaging in the framework of biased competition. In Sabine Kastner and Anna Christina Nobre (eds.) *Handbook of Attention*. Oxford, UK: Oxford University Press
73. Beck, D.M. & Tapia, E. (2013). The Brain. In E. Diener & R. Biswas-Diener (Eds), *Noba textbook series: Psychology*. Champaign, IL: DEF Publishers. DOI: [www.nobaproject.com](http://www.nobaproject.com)
74. Baldassano, C., Jordan, M.C., Beck, D.M. Fei-Fei, L. (2012) Discovering Voxel-Level Functional Connectivity Between Cortical Regions *Proceedings of the Machine Learning and Interpretation in Neuroimaging (MLINI) Workshop, NIPS 2012*.
75. Walther, D.B., Beck, D.M., & Fei-Fei, L. (2012). To err is human: correlating fMRI decoding and behavioral errors to probe the neural representation of natural scene categories. In Nikolaus Kriegeskorte and Gabriel Kreiman (eds.), *Understanding visual population codes – Toward a common multivariate framework for cell recording and functional imaging*. Cambridge, MA: MIT Press
76. Kastner, S., McMains, S. A., & Beck, D.M. (2009) Mechanisms of selective attention in the human visual system: Evidence from neuroimaging. In M. S. Gazzaniga (Ed.) *Cognitive Neurosciences IV*. Cambridge, MA: MIT Press.
77. Kastner, S. & Beck, D. M. (2005). Biasing competition in human visual cortex. In L. Itti, G. Rees, & J. Tsotsos (Eds.) *Neurobiology of Attention*. San Diego, CA: Elsevier.
78. Palmer, S., Neff, J., & Beck, D. (1997). Grouping and Amodal Completion. In I. Rock (Ed.) *Indirect Perception*. Cambridge, MA: MIT Press/Bradford Books.

**Chapters/  
Proceedings/  
Books**

**Publicly  
Available  
Manuscripts**

- Clevenger, J., Yang, P.-L., & Beck, D. M. (2019). An advantage for targets located horizontally to the cued location. *BioRxiv*, 740712. <https://doi.org/10.1101/740712>
- Greene, M. R., Botros, A. P., Beck, D. M., & Fei-Fei, L. (2014). Visual noise from natural scene statistics reveals human scene category representations. *arXiv preprint arXiv:1411.5331*. <https://arxiv.org/abs/1411.5331>

**Manuscripts**

- Yang, P.-L., & Beck, D.M. (submitted). Familiarity influences visual detection before explicit recognition: Logos and Faces. *Attention Perception & Psychophysics*



Jordan, M.C., Greene, M.R., Fei-Fei, L., & Beck, D.M. (in revision). Sequential Warping of Neural Representations Contributes to the Emergence of Separable Object Categories.

Knight, Fabiani, Gratton, & Beck (in preparation) A TMS-EROS investigation of the role of feedback to early visual cortex in visual awareness.

Metzger, Low, Fabiani, Gratton, Beck (in preparation) Frontoparietal network activity precedes and facilitates updates to visual consciousness during binocular rivalry.

Center, Federmeier, & Beck (in preparation) Sensitivity to Statistical Regularity does not require attention.

Clevenger & Beck (in preparation). Unpacking the resource account of hemispheric independence

**Conference  
Presentations  
and Abstracts  
(last 3 years)**

Chong, L.L., Beck, D.M. (2021). *Statistical regularity affects inattentional blindness*. Poster presentation at the 21th Annual Meeting of the *Vision Sciences Society (V-VSS, 2021)*.

Yang, P. L., & Beck, D. M. (2021). Does familiarity influence discrimination? Famous and Inverted Faces and Logos. Poster presentation at the 21th Annual Meeting of the *Vision Sciences Society (V-VSS, 2021)*.

Zimmicki, C., Cunningham, E.C., & Beck, D.M. (2020). Spontaneous pre-stimulus alpha activity predicts visual, but not auditory, detection. Poster presented at the annual meeting of the Society for Psychophysiological Research (Virtual).

Weber, M., Cunningham, E.C., Beck, D.M., Sadaghiani, S., and Wang, R.F. (2020). Understanding the emergence of Mind-wandering. Poster presented at the annual meeting of the Psychonomic Society (Virtual).

Yang, P., Center, E.G., Beck, D.M. (2020). Does statistical regularity influence detection? Famous vs novel logos and canonical vs noncanonical viewpoints. Visual Science Society Virtual Meeting (held online due to COVID-19)

Chong, L.L., Clevenger, J., Diddi, D., Wang, Z.Y., Chong, M.J., Beck, D. (2019). *Confusions in Humans and State-of-the-Art Deep Convolutional Neural Networks*. Poster presentation at the 26<sup>th</sup> Object Perception, visual Attention, and visual Memory conference (OPAM), Montreal, Canada.

Knight, R., Gratton, G., Fabiani, M., Beck, D.M. (2019). A TMS-EROS investigation of the role of feedback to early visual cortex in visual awareness. Talk presented at the Vision Science Society Annual Meeting, St. Pete Beach, FL.

Center, E.G., Federmeier, K.D., Beck, D.M. (2019). Does the brain's sensitivity to statistical regularity require attention? Poster presented at the Visual Science Society Annual Meeting, St. Pete's Beach, FL, USA.

Chiu, Y. C., Wang, T.H., Beck, D.M., Lewis-Peacock, J. A., Sahakyan, L. (2018) Separation of Items from Their Context Observed via fMRI pattern analysis of item-method directed forgetting. Poster presentation at the Psychonomic Society Annual Meeting, New Orleans, LA.

Knight, R. S., Gratton, G., Fabiani, M., & Beck, D. M. (2018). The role of feedback to early visual cortex in visual awareness: A TMS-EROS investigation. Oral Presentation at Society for Neuroscience Annual Meeting, San Diego, CA, USA.

Cunningham, E.C., Wang, R.F., and Beck, D.M. (2018). Cross-modal entrainment in the alpha band: effects of 8-12 Hz rhythmic auditory stimulation on visual perception. Poster presented at OPAM (Object, Perception, Attention & Memory) conference in New Orleans, LA, USA.

Yang, P. L., Clevenger, J., & Beck, D. M. (2018). A horizontal advantage for attention: enhanced performance for targets located horizontally to an exogenous cue. Poster presented at OPAM (Object, Perception, Attention & Memory) conference in New Orleans, LA, USA.

Center, E.G., Beck, D.M. (2018). Canonical items are seen longer: Statistical regularity predicts perceptual duration. Poster presented at the Psychonomics Society Annual Meeting, New Orleans, LA, USA.

## Invited Talks

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Beck, D.M., Rees, G., Frith, C. D. & Lavie, N. (2001). Neural correlates of change detection and change blindness. Recent Developments in Change Blindness Colloquium at Association for the Scientific Study of Consciousness 5th Annual Meeting, North Carolina, USA.

Beck, D.M (2001). An fMRI study of change blindness and change Detection. School of Cognitive and Computing Sciences, Sussex University, Brighton, England

Beck, D.M. (2002). The Role of Parietal Cortex and Attention in Change Blindness School of Psychology, University of Wales at Bangor, Bangor, Wales

Beck, D.M. (2002). The Role of Parietal Cortex and Attention in Change Blindness Department of Human Sciences, Brunel University, Uxbridge, England

Beck, D.M. (May, 2003). Biasing Competition in the Human Visual Cortex: Evidence for Top-down and Bottom-up Effects. Neuroscience Retreat, Princeton University, Princeton, NJ.

Beck, D.M. (October, 2003). The Role of Parietal Cortex and Attention in Change Blindness. Symposium on Change Blindness Phenomenon: Behavioral and Neurophysiological Implications, Brain Sciences Institute, RIKEN, Wako-shi, Japan, Change Blindness Symposium.

Beck, D.M. (February, 2004). Top-down and Bottom-up Processes in Vision. Department of Cognitive Science, University of California, Irvine, CA.

Beck, D.M. (March, 2004). Top-down and Bottom-up Processes in Vision. Department of Psychology, University of Wisconsin, Madison, WI.

Beck, D.M. (December, 2004). Top-down and Bottom-up Processes in Vision. Department of Psychology, University of Illinois, Urbana-Champaign, IL.

Beck, D.M. (December, 2004). Top-down and Bottom-up Processes in Vision. Department of Psychology, Michigan State University, Lansing, MI.

Beck, D.M. (February, 2005). Top-down and Bottom-up Processes in Vision. Department of Psychology, University of Utah, Salt Lake City, UT.

Beck, D.M. (December 13, 2005). Capacity, Context, and Neural Competition. Psychology Department, Rice University, Houston, TX.

Beck, D.M. (August 4, 2006). Capacity, Context, and Neural Competition. Psychology Department, Vanderbilt University, Nashville, TN.

Beck, D.M. (November 30, 2007). Perceptual Capacity and Biased Competition. Psychology Department, Northwestern University, Chicago, IL.

Kastner, S & Beck, D.M. (June 26, 2008). Mechanisms of Selective Attention in the Human Visual System: Evidence from Neuroimaging. 2008 Summer Institute in Cognitive Neuroscience, Tahoe, CA.

Beck, D.M. (October 3, 2009). Perceptual load and role of competitive interactions in visual cortex. Gesellschaft für Unendliche Versuche, Saint Louis, MO.

Beck, D.M. (April 23, 2010). Our limited and not so limited visual capacity. Psychology Department, University of Michigan, MI.

Beck, D.M. (September 30, 2010). Interactions in visual cortex limit attention's ability to act on multiple items. Invited Chair and speaker at "Competing for attention: Cortical mechanisms of selection," 2010 Presidential Symposium at Society for Physiological Research Meeting, Portland, OR.

Beck, D.M. (June 9, 2010). Our limited and not so limited visual capacity. Department of Psychological and Brain Sciences, John Hopkins University, MD.

Beck, D.M. (October 20, 2010). Our limited and not so limited visual capacity. Psychology Department, Washington University in St. Louis, MO.

Beck, D.M. (October 15, 2010) Using Brain Scans (fMRI) to Detect Fraud: Myth or Reality? 19th Symposium on Auditing Research, Department of Accountancy, University of Illinois.

Beck, D.M. (February 23, 2011). Our proficient but limited visual brain. Beckman Director's Seminar Series. Beckman Institute, University of Illinois.

Beck, D.M. & Scalf, P. (September 30, 2011). Interactions in Visual Cortex Limit Attention's ability to act on multiple items. Talk presented at the 'Regulating access to consciousness: Cortical mechanisms of attention' Symposium at the International Conference on Cognitive Neuroscience XI, Mallorca, Spain. (Co-Chair of Symposium).

Beck, D.M. (January 13, 2012) Decoding Natural Scenes. Cognitive Science Colloquia, University of Arizona, Tuscon, Arizona.

Beck, D.M. (July 6, 2012) Decoding Natural Scenes. Seminars in Psychological and Psychiatric Sciences and Neuroscience. University of Verona, Italy.

Beck, D.M. (April 30, 2013) Decoding Natural Images in the Visual Brain. Information Science and Technology Seminar Series, Caltech, Pasadena, California.

Beck, D.M. (November 8, 2013) Our proficient but limited visual brain. Psychology colloquium series. University of Arkansas.

Beck, D.M. (July 30, 2014). The Role of Feedback in Visual Processing. Talk presented at the 'Brain Processes Associated With Cognitive Control' Symposium at the International Conference on Cognitive Neuroscience XII, Brisbane, Australia.

Beck, D.M. (August 5, 2014) Neural representations of scene and object categories. Cognitive Neuroscience seminar, University of Auckland, New Zealand.

Beck, D.M. (September 16, 2015). Neural representations of natural scenes. Cognitive Talk Series, Princeton University, New Jersey.

Beck, D.M. (April 13, 2016). Object and Scene Vision in the Human Brain. MARC (Maximizing Access to Research Careers) Visiting Scientist Lecture, CalSate Fullerton, California.

Beck, D.M. (September 28, 2016). Neural representations of objects and scenes: the role of knowledge and experience. Psychology Department Colloquium, University of Toronto, Canada.

Beck, D.M. (January 11, 2017). Our limited but proficient visual brain, Psychology Department, York University, Canada.

Beck, D.M. (October 19, 2018). Knowledge, Prior Experience and Natural Scenes. University of Wisconsin, Milwaukee, Wisconsin.

Beck, D.M. (December 5, 2018). The Importance of Prior Experience for Vision. Frontiers in Miniature Brain Machinery Seminar Series, University of Illinois.

Beck, D.M. (February 18, 2019). Neural Representations of Objects and Scenes: The Role of

Knowledge and Experience. Mathematical and Computational Psychology Colloquium, Purdue University, Indiana.

Beck, D.M. (March 5, 2019). Cortical Dynamics and Visual Awareness. NIH Symposium “From Mind-wandering to Mindfulness: the Role of Attention and Awareness,” National Institutes of Health, Bethesda, Maryland.

Beck, D.M. (September 12, 2019) The Impact of Prior Knowledge on Scene and Object Perception. Behavioral Neuroscience Brown Bag, University of Illinois

Beck, D.M. (February 24, 2020) The Impact of Prior Knowledge on Scene and Object Perception. Cognitive Neuroscience Brown Bag, University of Illinois.

Beck, D.M. (June 17, 2015; June 23, 2016; June 19, 2017; June 21, 2018, June 17, 2019, June 9, 2020; June 9, 2021) Top-down Cognitive Control in Scene Analysis. Office of Naval Research, Arlington, Virginia.

Beck, D.M. (April 1, 2021). Statistical Regularities in Scene and Object Perception. University of Chicago Medicine (Virtual).

Beck, D.M. (April 2, 2021). Prior Knowledge and Natural Scenes and Objects. Dartmouth College (Virtual).

Beck, D.M. (November 3, 2021). Our limited but proficient visual brain. Keynote Address at Object Perception, visual Attention and visual Memory (OPAM) Annual Conference.

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**Teaching**

Images of Mind (undergraduate lecture; neuroscience in the media)  
Cognitive Neuroscience of Vision (undergraduate lecture)  
Consciousness (graduate seminar)  
Theories of Attention (graduate course)  
Proseminar in Cognitive Neuroscience (graduate course)

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**Mentoring  
Experience**

*PhD students advised or co-advised*

*University of Illinois*

Eamon Caddigan, PhD. Psychology, 2006-2012; now at Federal Aviation Administration

Audrey Lustig, PhD Psychology, 2006-2012; now Research Scientist at University of Michigan

Kyle Mathewson, PhD Psychology, 2007-2010; now Assistant Professor at University of Alberta.

Ana Torralbo (visiting graduate student from Universidad Autónoma de Madrid), PhD. Psychology, 2006-2008; now Data Scientist, University College London.

Manoj Kumar Neuroscience Program, 2011-2017; now Postdoc at Princeton

Brian Metzger, Psychology, 2011-2017; now Postdoc at Baylor College of Medicine

Carolyn Hughes, Neuroscience Program, 2013-2016

John Clevenger Psychology, 2013-2017; now Data Scientist at Stitch Fix

Evan Center, Psychology, 2014-2020; now Postdoc in Oulu, Finland

Emily Cunningham, Psychology, 2015-present

Pei-Ling Yang, Psychology, 2019-present

Ling Lee Chong, Psychology, 2020-present

Zhenan Shao, Psychology, 2020-present

Yiwen Wang, Psychology, 2022-present

*Stanford University (co-advised with Fei-Fei Li)*

Christopher Baldassano, PhD Computer Science, 2010-2015; Assistant Professor  
Columbia University

Marius Cătălin Iordan, PhD Computer Science, 2010-2016; now Postdoc at Princeton

*Masters students advised*

Pei-Ling Yang, Psychology, 2017-2019

Ling Lee Chong, Psychology, 2018-2020

Dillon Quinones, 2021-present

Jacob Ryder, 2021-present

*Postdocs advised or co-advised*

*University of Illinois*

Paige Scalf, 2006-2011; formerly Assistant Prof at University of Arizona and Lecturer  
(Assist Prof equivalent) at Durham University, UK; now at U. of Arizona Law School

Ana Torralbo, 2008-2009; now Data Scientist at University College London

Dirk Walther, 2009 – 2010; now Associate Professor at University of Toronto

Nathan Parks, 2009-2012; formerly Associate Professor at University of Arkansas; now at  
Abbott Laboratories, Chicago

Evelina Tapia, 2010-2014; now Research Principle at Chai One, Houston

Kyle Mathewson, 2010-2014; now Associate Professor at University of Alberta

Heeyoung Choo, 2016-2018; now Senior User Experience Designer at Samsung  
Electronics, South Korea

Ramisha Knight, 2015-2020; now Research Scientist at Aptima, Inc

*Stanford University (co-advised with Fei-Fei Li)*

Michelle Greene, 2011-2015; now Assistant Professor at Bates College

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