

Curriculum Vitae
Bruce D. McCandliss, PhD

Contact information

Graduate School of Education
Stanford University
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Stanford, CA 94305-3096

Areas of specialization: Cognitive Psychology, Cognitive Neuroscience,
Developmental Psychology, Educational Cognitive Neuroscience

Current Appointment

Professor, Graduate School of Education, Stanford University.
Training Faculty, Interdepartmental Neurosciences Program, Stanford University

Education

1992-1997 PhD. University of Oregon, Eugene, OR
1991-1992 M.S. University of Oregon, Eugene, OR
1985-1989 B.S. Michigan State University, East Lansing, MI

Professional experience

2015- Professor (by courtesy), Department of Psychology, Stanford University

2014- Professor, Graduate School of Education, Stanford University

2009-2014 Professor of Psychology, Department of Psychology, School of Arts and Science, Vanderbilt University

2009-2014 Patricia and Rodes Hart Chair of Psychology and Human Development, Peabody College of Education and Human Development, Vanderbilt University

2009-2014 Faculty Member, Neuroscience Graduate Program, Vanderbilt Brain Institute, Vanderbilt University

2005-2008 Training Faculty, Neuroscience PhD Program, Weill Medical College of Cornell University, New York, NY

2005-2008 Associate Professor of Psychology in Psychiatry, Weill Medical College of Cornell University, New York, NY.

1999-2005 Assistant Professor of Psychology in Psychiatry, Weill Medical College of Cornell University, New York, NY.

1996-1999 Director, Learning Research and Development Center Reading Institute, University of Pittsburgh, Pittsburgh, PA.

1996-1999 Postdoctoral Research Scientist, Center for the Neural Basis of Cognition, Carnegie Mellon University and University of Pittsburgh, Pittsburgh, PA.

1991-1996 Graduate Research Assistant, University of Oregon, Eugene, OR.

Honors, Awards, Advisory Appointments

Honors

- 2018 Transforming Education Through the Science of Learning, Learning and the Brain Foundation
- 2006 U.S. Presidential Commendation: Presidential Early Career for Achievement in Science and Engineering (PECASE).
- 2002 John C. Merck Scholars Award, Biology of Developmental Disabilities in Children.
- 1997 McDonnell Foundation Cognitive Neuroscience Postdoctoral Fellowship.
- 1988 Phi Beta Kappa.

Awards to Active Trainees

- 2018 NIH K99/R00 Award to Joseph Baker
- 2012 Excellence in Cognitive Studies Award to Jessica Wise
- 2010 Foundation Fyssen Award to Arnaud Viarouge
- 2010 Fulbright Fellowship Award to Fengji Geng
- 2008 Fulbright Fellowship Award to Fransica Serano.
- 2005 Finish Academy of Science Fellowship Award to Minna Hannula.
- 2005 Duvigneud Symposium Award of Excellence to Sumit Niogi.
- 2003 NIH-NRSA Postdoctoral Training Award to Jason Zevin.
- 2003 Swiss National Science Foundation Fellowship Award to Urs Maurer.
- 2002 Fulbright Fellowship Award to Maria Ruz.

Advisory Board Appointments

- Board of Directors, International Mind, Brain, and Education Society (IMBES)
- Board of Directors, International Society for Developmental Cognitive Neuroscience (FLUX)
- Scientific Advisory Board (Chair), Temporal Dynamics of Learning Center. National Science Foundation, Science of Learning Center, UCSD.
- Scientific Advisory Board (Member), Visual Learning 2, National Science Foundation, Science of Learning Center, Gallaudet University.
- Scientific Advisor, Organization for Economic Cooperation and Economic Development, Center for Educational Research and Innovation: International Literacy Network
- Scientific Advisory Board Member, Canadian Language and Literacy Network

Publications

Statistical Summary

Total Citations = 21233; h-index = 54; i10-index = 78;

Papers > 1000 citations = 5;

Papers > 100 citations = 32;

U.S. Patents

Niogi, S., & McCandliss, B. D. (2011). Reproducible Objective Quantification Method to Segment White Matter Structures. United States Patent No. 8,077,937, Issued Dec 13, 2011

Under Review

Barnes, M.A., Martinez-Lincoln, A., Klein, A., Fall, A-M., Roberts, G., & **McCandliss, B. D.** Working Memory Moderates the Effects of Combined Math and Attention Interventions in Young Children.

Benson I., Marriot, N., & **McCandliss, B.** (2021). Engaging Algebra Early through Manipulatives: Reappraising Cuisinaire-Gattegno Rods. PsyArXiv.

Domingue, B., Kanopka, K., Stenhaus, B., Sulik, M., Beverly, T., Brinkhuis, M., Circi, R., Faul, J., Liao, D., **McCandliss, B.** and Obradovic, J., (2020). Speed accuracy tradeoff? Not so fast: Marginal changes in speed have inconsistent relationships with accuracy in real-world settings. PsyArXiv.

Pre-publication Preprints

Wang, F., Kaneshiro, B., Strauber, B.C., Hasak, L., Nguyen, Q.T.H., Yakovleva, A., Vildavski, V., Norcia, A.M., **McCandliss, B.D.** (2021). Neural Sources Underlying Visual Word Form Processing as Revealed by Steady State Visual Evoked Potentials (SSVEP). bioRxiv. doi: <https://doi.org/10.1101/2021.04.16.439729>

Younger, J. W., O'Laughlin, K. D., Anguera, J., Bunge, S. A., Ferrer, E., Hoeff, F., **McCandliss, B.**, Mishra, J., Rosenberg-Lee, M., Gazzaley, A., Uncapher, M. (2021). Development of Executive Function in Middle Childhood: A Large-Scale, In-School, Longitudinal Investigation. PsyArXiv. doi: <https://doi.org/10.31234/osf.io/xf489>

Kohler, P.J., Barzegaran, E., Norcia, AM., **McCandliss B.** (2020) Parietal Contributions to Abstract Numerosity Measured with 2 Steady State Visual Evoked Potentials. bioRxiv. doi: <https://doi.org/10.1101/2020.08.06.239889>

External Thesis Advisor:

Gopalan, P. R. S., Loberg, O., Lohvansuu, K., **McCandliss, B.**, Hämäläinen, J., & Leppänen, P. (2020). Attentional Processes in Children With Attentional

Problems or Reading Difficulties as Revealed Using Brain Event-Related Potentials and Their Source Localization. *Frontiers in Human Neuroscience*, 14. doi: 10.3389/fnhum.2020.00160

Peer Reviewed Articles

Chaarani, B., Hahn, S., Allgaier, N., Adise, S., Owens, M.M., Juliano, A.C., Yuan, D.K., Loso, H., Ivanciu, A., Albaugh, M.D., Dumas, J., Mackey, S., Laurent, J., Ivanova, M., Hagler, D.J., Cornejo, M.D., Hatton, S., Agrawal, A., Aguinaldo, L., Ahonen, L., Aklin, W., Anokhin, A.P., Arroyo, J., Avenevoli, S., Babcock, D., Bagot, K., Baker, F.C., Banich, M.T., Barch, D.M., Bartsch, A., Baskin-Sommers, J.M., Bjork, D., Blachman-Demner, M., Bloch, R., Bogdan, S.Y., Bookheimer, H., Breslin, F., Brown, S., Calabro, F.J., Calhoun, V., Casey, B.J., Chang, L., Clark, D.B., Cloak, C., Constable, R.T., Constable, K., Corley, R., Cottler, L.B., Coxe, S., Dagher, A.M., Dale, M., Dapretto, R., Delcarmen-Wiggins, A. S. Dick, E.K. Do15, N.U.F. Dosenbach, R., Dowling, G.J., Edwards, S., Ernst, T.M., Fair, D.A., Fan, C.C., Feczko, E., Feldstein-Ewing, S.W., Florsheim, P., Foxe, J.J., Freedman, E.G., Friedman, N.P., Friedman-Hill, S., Fuemmeler, B.F., Galvan, A., Gee, D.G., Giedd, J., Glantz, M., Glaser, P., Godino, J., Gonzalez, M., Gonzalez, R., Grant, S., Gray, K.M., Haist, F., Harms, M.P., Hawes, S., Heath, A.C., Heeringa, S., Heitzeg, M.M., Hermsillo, R., Herting, M.M., Hettema, J.M., Hewitt, J.K., Heyser, C., Hoffman, E., Howlett, K., Huber, R.S., Huestis, M.A., Hyde, L.W., Iacono, W.G., Infante, M.A., Irfanoglu, O., Isaiah, A., Iyengar, S., Jacobus, J., James, R., Jean-Francois, B., Jernigan, T., Karcher, N.R., Kaufman, A., Kelley, B., Kit, B., Ksinan, A., Kuperman, J., Laird, A.R., Larson, C., LeBlanc, K., Lessov-Schlagger, C., Lever, N., Lewis, D.A., Lisdahl, K., Little, A.R., Lopez, M., Luciana, M., Luna, B., Madden, P.A., Maes, H.H., Makowski, C., Marshall, A.T., Mason, M.J., Matochik, J., **McCandliss, B.D.**, McGlade, E.E., Montoya, I., Morgan, G., Morris, A., Mulford, C., Murray, P., Nagel, B.J., Neale, M.C., Neigh, G., Nencka, A., Noronha, A., Nixon, S.J., Palmer, C.E., Pariyadath, V., Paulus, M.P., Pelham, W.E., Pfefferbaum, D., Pierpaoli, C., Prescott, A., Prouty, D., Puttler, L.I., Rajapaske, N., Rapuano, K.M., Reeves, G., Renshaw, P.F., Riedel, M.C., Rojas, P., de la Rosa, M., Rosenberg, M.D., Ross, M. J., Sanchez, M., Schirda, C., Schloesser, D., Schulenberg, J., Sher, K.J., Sheth, C., Shilling, P.D., Simmons, W.K., Sowell, E.R., Speer, N., Spitte, M., Squeglia, L.M., Sripada, C., Steinberg, J., Striley, C., Sutherland, M.T., Tanabe, J., Tapert, S.F., Thompson, W., Tomko, R.L., Uban, K.A., Vrieze, S., Wade, N.E., Watts, R., Weiss, S., Wiens, B.A., Williams, O.D., Wilbur, A.A., Wing, D., Wolff-Hughes, D., Yang, R., Yurgelun-Todd, D.A., Zucker, R.A., Potter, A., Garavan, H.P. & the ABCD Consortium. Baseline Brain Function in the Pre-Adolescents of the ABCD Study. In press, *Nature Neuroscience*. 2021.

- Chaarani, B., Allgaier, N., Hahn, S., Adise, S., Owens, M., Yuan, D.K., Loso, H., Ivanciu, A., Dumas, J., Mackey, S., Laurent, J., Ivanova, M., ...
McCandliss, B.D. Brain Function in the Pre-Adolescent Brain: Results from the ABCD Study. In press, *Nature Neuroscience*. 2021.
- Starkey, G. S. & **McCandliss, B. D.**, (2021). A probabilistic approach for quantifying children's subitizing span. *Journal of Experimental Child Psychology* 207. doi: <https://doi.org/10.1016/j.jecp.2021.105118>
- Strauber, C.B., Ali, L.R., Fujioka, T., Thille, C., **McCandliss, B.D.** (2021). Replicability of neural responses to speech accent is driven by study design and analytical parameters. *Scientific Reports* 11, 4777. doi: <https://doi-org.stanford.idm.oclc.org/10.1038/s41598-021-82782-4>
- Barnes, M. A., Clemens, N. H., Fall, A.-M., Roberts, G., Klein, A., Starkey, P., **McCandliss, B.**, Zucker, T., & Flynn, K. (2020). Cognitive predictors of difficulties in math and reading in pre-kindergarten children at high risk for learning disabilities. *Journal of Educational Psychology*, 112(4), 685–700. doi: 10.1037/edu0000404
- Kanayet, F. J., Mattarella-Micke, A., Kohler, P. J., Norcia, A. M., **McCandliss, B. D.**, & McClelland, J. L. (2018). Distinct Representations of Magnitude and Spatial Position within Parietal Cortex during Number–Space Mapping. *Journal of Cognitive Neuroscience*, 30(2), 200-218.
- Liao, K., **McCandliss, B. D.**, Carlson, S. E., Colombo, J., Shaddy, D. J., Kerling, E. H., Gustafson, K. M. (2017). Event-related potential differences in children supplemented with long-chain polyunsaturated fatty acids during infancy. *Developmental science*, 20(5), 10.1111/desc.12455.
- Barnes, M.A., Klein, A., Swank, P. Starkey, P. & **McCandliss, B.D.** (2016). Effects of Tutorial Interventions in Mathematics and Attention for Low-Performing Preschool Children. *Journal of Research on Educational Effectiveness*. 9 (4), 577-606.
- Gordon, R.L., Fehd, H. M. & **McCandliss, B. D.** (2015). Does music training enhance literacy skills? A meta-analysis. *Frontiers in Psychology*, 6, 177.
- Yoncheva, Y., Wise, J., & **McCandliss, B.D.** (2015). Hemispheric specialization for visual words is shaped by attention to sublexical units during initial learning. *Brain and Language*.
- Yoncheva, Y., Maurer, U., Zevin, J., & **McCandliss, B. D.** (2014). Selective attention to phonology dynamically modulates initial encoding of auditory words within the left hemisphere. *NeuroImage*, 97 (15), 262-270
- Viarouge, A., Hubbard E. M. & **McCandliss, B. D.** (2014). The cognitive mechanisms of the SNARC effect: an individual differences approach. *PLoS One*, 9 (4), e95756.
- Weisberg, D. S., Hirsh-Pasek, K., Golinkoff, R. M., & **McCandliss, B. D.** (2014). *Mise en place*: setting the stage for thought and action. *Trends in Cognitive Sciences*, 18(6), 276-278.

- Starkey, G. & **McCandliss, B. D.**, (2014). The emergence of “groupitizing” in children’s numerical cognition. *Journal of Experimental Child Psychology* 126, 120-137.
- Gimenez, P., Bugescu, N., Black, J., Hancock, R., Pugh, K., Nagamine, M., Kutner, E., Mazaika, P., Hendren, R., **McCandliss, B. D.**, & Hoeft, F. (2014) Neuroimaging correlates of handwriting quality as children learn to read and write. *Frontiers in Human Neuroscience*, 8:155.
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- Yang, J.F., Shu, H., **McCandliss, B. D.**, & Zevin J.D. (2013). Orthographic influences on division of labor in learning to read Chinese and English: Insights from computational modeling. *Bilingualism: Language and Cognition*, 16, 354-366.
- McCandliss, B. D.** (2012). Helping dyslexic children attend to letters within visual word forms. *Proceedings of the National Academy of Sciences*, 109, 11064-11065.
- McCandliss, B. D.** & Yoncheva, Y.Y. (2012). Integration of left-lateralized neural systems supporting skilled reading. (pp. 315-328.) In A. Benasich & H. Fitch (Eds.) *Developmental Dyslexia: Early Precursors, Neurobehavioral Markers, and Biological Substrates*. Baltimore, MD: Paul H. Brookes Publishing.
- McCandliss, B. D.** (2012). Microstructural properties of white matter tracts are linked to the efficiency of specific attention networks. (pp. 187-196.) In M. I. Posner (Ed.) *Cognitive Neuroscience, 2nd Edition*. New York: Guilford Press.
- Wise, J., Yoncheva, Y., & **McCandliss, B. D.** (2011). Effects of preference and strategy on learning to read an artificial script. *Indiana University Undergraduate Journal of Cognitive Science*, 6, 38-47.
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- McCandliss, B. D.** (2010). Educational Neuroscience: the early years. *Proceedings of the National Academy of Sciences*, 107, 8049-8050.
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- Zevin, J. D., Yang, J., Skipper, J. I., & **McCandliss, B. D.** (2010). Domain general change detection accounts for “dishabituation” effects in temporal-parietal regions in fMRI studies of speech perception. *Journal of Neuroscience*, 30, 1110-1111.

- Yoncheva, Y. Y., Zevin, J. D., Maurer, U., & **McCandliss, B. D.** (2010). Auditory selective attention to speech modulates activity in the visual word form area. *Cerebral Cortex*, *20*(3), 622–632.
- Niogi, S. N., Mukherjee P., Ghajar, J., & **McCandliss B. D.** (2010) Individual differences in distinct components of attention are linked to anatomical variations in distinct white matter tracts. *Frontiers in Neuroanatomy*, *4*(2), 1-12.
- Yoncheva, Y. N., Blau, V. C., Maurer, U., & **McCandliss, B. D.** (2010). Attentional focus during learning impacts N170 ERP responses to an artificial script. *Developmental Neuropsychology*, *35*(4), 423-445.
- Maurer, U., Blau, V. C., Yoncheva, Y., & **McCandliss, B. D.** (2010). Development of visual expertise for reading: Rapid emergence of visual familiarity for an artificial script. *Developmental Neuropsychology*, *35*(4), 404–422.
- Yang, J., **McCandliss, B. D.**, Shu, H. & Zevin, J. D. (2009) Simulating language-specific and language-general effects in a statistical learning model of Chinese reading. *Journal of Memory and Language*, *61*, 238-257.
- Niogi, S. N., Mukherjee P., Ghajar, J., Johnson, C., Kolster, R., Lee, H., Suh, M., Zimmerman, R., Manley, G. & **McCandliss B. D.** (2008) Structural dissociation of attentional control and memory in adults with and without mild traumatic brain injury. *Brain: A Journal of Neurology*, *131*, 3209-3221.
- Maurer U., & **McCandliss B. D.** (2008) The development of visual expertise for words: the contribution of electrophysiology. In E. L. Grigorenko & A. Naples (Eds.). *Single-Word Reading: Cognitive, Behavioral and Biological Perspectives*. (p.43-63). Mahwah, NJ: Lawrence Erlbaum Associates.
- Niogi, S. N., Mukherjee, P., Ghajar, J., Johnson, C., Kolster, R. A., Sarkar, R., Lee, H., Meeker, M., Zimmerman, R.D., Maley, G.T., & **McCandliss, B. D.** (2008). Extent of Microstructural White Matter Injury in Postconcussive Syndrome Correlates with Impaired Cognitive Reaction Time: A 3T Diffusion Tensor Imaging Study of Mild Traumatic Brain Injury. *American Journal of Neuroradiology*, *29*(5), 967 LP – 973.
- Varma, S., **McCandliss, B. D.**, & Schwartz, D. L. (2008). Scientific and pragmatic challenges for bridging education and neuroscience. *Educational Researcher*, *37*, 140-152.
- Suh, M., Kolster, R., Niogi, S., **McCandliss, B. D.**, Ivry, R. B., Voss, H.U., Sarkar, R., & Ghajar, J. (2008) Degree of brain connectivity predicts eye-tracking variability. *Journal of the Korean Physical Society*, *53*(6), 3468-3473.
- Maurer, U., Rossion, B., & **McCandliss, B. D.** (2008). Category specificity in early perception: face and word N170 responses differ in both lateralization and habituation properties. *Frontiers in Human Neuroscience*, *2*(18), 1-7.
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- Van Eimeren, L. V., Niogi, S., **McCandliss, B. D.**, Holloway, I. D., Ansari, D. (2008). White Matter Microstructures underlying Mathematical Abilities in Children. *NeuroReport*, 11, 1117-1121.
- Maurer, U., Zevin, J. D., **McCandliss, B. D.**, (2008). Left-lateralized N170 effects of visual expertise in reading: evidence from Japanese syllabic and logographic scripts. *Journal of Cognitive Neuroscience*, 10, 1878-1891.
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- Tamm, L., **McCandliss, B. D.**, Liang, B. A., Wigal, T. L., Posner, M. I., & Swanson, J. M. (2007). Can attention itself be trained? Attention training for children at-risk for ADHD. (pp. 397-409.) In K. McBurnett (Ed.), *Attention Deficit Hyperactivity Disorders: Concepts, Controversies, New Directions*, First Edition, New York: Marcel Dekker.
- Schlaggar, B., & **McCandliss, B. D.** (2007). Development of Neural Systems for Reading. *Annual Review of Neuroscience*, 30, 475-503.
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- Fan, J., Byrne, J., Worden, M. S., Guise, K., **McCandliss, B. D.**, Fossella, J., & Posner, M.I. (2007). The relation of brain oscillations to attentional networks. *Journal of Neuroscience*, 27(12), 6197-6206.
- Fan, J., Kolster, R., Ghajar, J., Suh, M., Knight R. T., Sarkar, R., & **McCandliss, B. D.** (2007). Response anticipation and response conflict: an event related potential and functional magnetic resonance Imaging study. *Journal of Neuroscience*, 27(9), 2272-2282.
- Niogi, S. N., Mukherjee, P., & **McCandliss, B. D.** (2007). Diffusion tensor imaging segmentation of white matter structures using a Reproducible Objective Quantification Scheme (ROQS). *NeuroImage*, 35, 166-174.
- Voss, H. U., **McCandliss, B. D.**, Ghajar, J., Suh, M. (2007) A quantitative synchronization model for smooth pursuit target tracking. *Biological Cybernetics*, 96(3), 309-322.
- Noble, K. G., Farah, M. & **McCandliss, B. D.** (2006). Socioeconomic background modulates cognition-achievement relationships in reading. *Cognitive Development*, 21, 349-368.

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