Stanford

Bruce McCandliss

Pigott Family Graduate School of Education Professor

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Assistant**

  Leslie Dinan - Administrative Assitant

  Email ldinan@stanford.edu

Bio

ACADEMIC APPOINTMENTS

- Professor, Graduate School of Education
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

PROGRAM AFFILIATIONS

- Symbolic Systems Program

LINKS

- My Lab Site: https://edneuroinitiative.stanford.edu/

Research & Scholarship

RESEARCH INTERESTS

- Brain and Learning Sciences
- Diversity and Identity
- Psychology
- Research Methods
- Technology and Education

Teaching

COURSES

2025-26

- Advanced Methods in Education and Neuroscience: Electrophysiology: EDUC 499 (Win)
- Topics in Cognition and Learning: Enhancing Human Cognition with AI: EDUC 218 (Spr)

2024-25

- Advanced Methods in Education and Neuroscience: Electrophysiology: EDUC 499 (Aut)
- Cognitive Development in Childhood and Adolescence: EDUC 368 (Win)
- Educational Neuroscience: EDUC 486 (Spr)
- Field Research in Educational Neuroscience: EDUC 498 (Aut)

2023-24

- Advanced Methods in Education and Neuroscience: Electrophysiology: EDUC 499 (Aut)
- Educational Neuroscience: EDUC 266 (Win)
- Field Research in Educational Neuroscience: EDUC 498 (Spr)

2022-23

- Cognitive Development in Childhood and Adolescence: EDUC 368 (Spr)
- Topics in Cognition and Learning: Technology and Multitasking: EDUC 218 (Win)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Adi Korisky, Ethan Roy, Lin Zhou

Doctoral Dissertation Advisor (AC)

Madison Bunderson, Ma Cherrysse Ulsa

Doctoral (Program)

Madison Bunderson, Neha Rajagopalan, Ma Cherrysse Ulsa, Priscilla Zhao

Publications

PUBLICATIONS

- **Toward precision EEG: assessing the reliability of individual-level ERPs across EEG systems** *FRONTIERS IN HUMAN NEUROSCIENCE*
  Kilim, A., Rabinovitch, E., Har-Shai Yahav, P., McCandliss, B. D., Zion-Golumbic, E.
  2026; 20
- **Toward precision EEG: assessing the reliability of individual-level ERPs across EEG systems.** *Frontiers in human neuroscience*
  Kilim, A., Rabinovitch, E., Har-Shai Yahav, P., McCandliss, B. D., Zion-Golumbic, E.
  2026; 20: 1763477
- **Steady-state EEG captures how elementary classroom instruction drives plasticity for novel visual words.** *NPJ science of learning*
  Wang, F., Toomarian, E. Y., Gosavi, R. S., Kaneshiro, B., Norcia, A. M., McCandliss, B. D.
  2025; 10 (1): 83
- **Cortical latency predicts reading fluency from late childhood to early adolescence.** *Developmental cognitive neuroscience*
  Wang, F., Nguyen, Q. T., Kaneshiro, B., Norcia, A. M., McCandliss, B. D.
  2025; 77: 101616
- **Tablet-based arithmetic fluency assessment reveals developments in math cognition and math achievement from childhood to adolescence.** *NPJ science of learning*
  Roy, E., Guillaume, M., Van Rinsveld, A., McCandliss, B. D.
  2025; 10 (1): 19
- **Emerging Insights From a Research-Practice Partnership Approach to Educational Neuroscience** *MIND BRAIN AND EDUCATION*
  Toomarian, E. Y., Gosavi, R. S., Hasak, L. R., Bunderson, M., McCandliss, B. D.
  2024
- **Differences in educational opportunity predict white matter development.** *Developmental cognitive neuroscience*

Roy, E., Van Rinsveld, A., Nedelec, P., Richie-Halford, A., Rauschecker, A. M., Sugrue, L. P., Rokem, A., McCandliss, B. D., Yeatman, J. D.
2024; 67: 101386

- **White matter and literacy: A dynamic system in flux.** *Developmental cognitive neuroscience*
  Roy, E., Richie-Halford, A., Kruper, J., Narayan, M., Bloom, D., Nedelec, P., Rauschecker, A. M., Sugrue, L. P., Brown, T. T., Jernigan, T. L., McCandliss, B. D., Rokem, A., Yeatman, et al
  2024; 65: 101341

- **Better together: novel methods for measuring and modeling development of executive function diversity while accounting for unity.** *Frontiers in human neuroscience*
  Younger, J. W., O'Laughlin, K. D., Anguera, J. A., Bunge, S. A., Ferrer, E. E., Hoeft, F., McCandliss, B. D., Mishra, J., Rosenberg-Lee, M., Gazzaley, A., Uncapher, M. R.
  2023; 17: 1195013

- **Progress in elementary school reading linked to growth of cortical responses to familiar letter combinations within visual word forms.** *Developmental science*
  Wang, F., Kaneshiro, B., Toomarian, E. Y., Gosavi, R. S., Hasak, L. R., Moron, S., Nguyen, Q. T., Norcia, A. M., McCandliss, B. D.
  2023: e13435

- **Interventions to improve equational reasoning: replication and extension of the Cuisenaire-Gattegno curriculum effect.** *Frontiers in psychology*
  Benson, I., Marriott, N., McCandliss, B. D.
  2023; 14: 1116555

- **Editorial: Neural bases of reading acquisition and reading disability.** *Frontiers in neuroscience*
  Tan, L. H., Perfetti, C. A., Ziegler, J. C., McCandliss, B.
  2023; 17: 1147156

- **Groupitizing reflects conceptual developments in math cognition and inequities in math achievement from childhood through adolescence.** *Child development*
  Guillaume, M., Roy, E., Van Rinsveld, A., Starkey, G. S., Uncapher, M. R., McCandliss, B. D.
  2022

- **Lexical and sublexical cortical tuning for print revealed by Steady-State Visual Evoked Potentials (SSVEPs) in early readers.** *Developmental science*
  Wang, F., Nguyen, Q. T., Kaneshiro, B., Hasak, L., Wang, A. M., Toomarian, E. Y., Norcia, A. M., McCandliss, B. D.
  2022: e13352

- **Location matters: Regional variation in association of community burden of COVID-19 with caregiver and youth worry.** *Health & place*
  Marshall, A. T., Hackman, D. A., Kan, E., Abad, S., Baker, F. C., Baskin-Sommers, A., Dowling, G. J., Gonzalez, M. R., Guillaume, M., Kiss, O., McCabe, C. J., McCandliss, B. D., Pelham, et al
  2022; 77: 102885

- **Equational reasoning: A systematic review of the Cuisenaire-Gattegno approach** *FRONTIERS IN EDUCATION*
  Benson, I., Marriott, N., McCandliss, B. D.
  2022; 7

- **Speed-Accuracy Trade-Off? Not So Fast: Marginal Changes in Speed Have Inconsistent Relationships With Accuracy in Real-World Settings** *JOURNAL OF EDUCATIONAL AND BEHAVIORAL STATISTICS*
  Domingue, B. W., Kanopka, K., Stenhaug, B., Sulik, M. J., Beverly, T., Brinkhuis, M., Circi, R., Faul, J., Liao, D., McCandliss, B., Obradovic, J., Piech, C., Porter, et al
  2022

- **Negative Impacts of Pandemic Induced At-Home Remote Learning Can Be Mitigated by Parental Involvement** *FRONTIERS IN EDUCATION*
  Guillaume, M., Toomarian, E. Y., Van Rinsveld, A., Baskin-Sommers, A., Dick, A., Dowling, G. J., Gonzalez, M., Hasak, L., Lisdahl, K. M., Marshall, A. T., Nguyen, Q. H., Pelham, W. E., Pillai, et al
  2022; 7

- **How Movie Events Engage Childrens' Brains to Combine Visual Attention with Domain-Specific Processing Involving Number and Theory of Mind in a Cinematic Arena** *PROJECTIONS-THE JOURNAL FOR MOVIES AND MIND*
  Levin, D. T., Mattarella-Micke, A., Lee, M. J., Baker, L. J., Bezdek, M. A., McCandliss, B. D.

2022; 16 (1): 67-83

- **Age-related changes and longitudinal stability of individual differences in ABCD Neurocognition measures.** *Developmental cognitive neuroscience*
  Anokhin, A. P., Luciana, M., Banich, M., Barch, D., Bjork, J. M., Gonzalez, M. R., Gonzalez, R., Haist, F., Jacobus, J., Lisdahl, K., McGlade, E., McCandliss, B., Nagel, et al
  2022; 54: 101078

- **The Pandemic's Toll on Young Adolescents: Prevention and Intervention Targets to Preserve Their Mental Health.** *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*
  Kiss, O., Alzueta, E., Yuksel, D., Pohl, K. M., de Zambotti, M., Muller-Oehring, E. M., Prouty, D., Durley, I., Pelham, W. E., McCabe, C. J., Gonzalez, M. R., Brown, S. A., Wade, et al
  1800

- **Distinct neural sources underlying visual word form processing as revealed by steady state visual evoked potentials (SSVEP).** *Scientific reports*
  Wang, F., Kaneshiro, B., Strauber, C. B., Hasak, L., Nguyen, Q. T., Yakovleva, A., Vildavski, V. Y., Norcia, A. M., McCandliss, B. D.
  2021; 11 (1): 18229

- **Early Adolescent Substance Use Before and During the COVID-19 Pandemic: A Longitudinal Survey in the ABCD Study Cohort.** *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*
  Pelham, W. E., Tapert, S. F., Gonzalez, M. R., McCabe, C. J., Lisdahl, K. M., Alzueta, E., Baker, F. C., Breslin, F. J., Dick, A. S., Dowling, G. J., Guillaume, M., Hoffman, E. A., Marshall, et al
  2021; 69 (3): 390-397

- **A probabilistic approach for quantifying children's subitizing span.** *Journal of experimental child psychology*
  Starkey, G. S., McCandliss, B. D.
  2021; 207: 105118

- **Replicability of neural responses to speech accent is driven by study design and analytical parameters.** *Scientific reports*
  Strauber, C. B., Ali, L. R., Fujioka, T., Thille, C., McCandliss, B. D.
  2021; 11 (1): 4777

- **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*
  Santhana Gopalan, P., Loberg, O., Lohvansuu, K., McCandliss, B., Hamalainen, J., Leppanen, P.
  2020; 14

- **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*
  Santhana Gopalan, P. R., Loberg, O., Lohvansuu, K., McCandliss, B., Hämäläinen, J., Leppänen, P.
  2020; 14: 160

- **Cognitive Predictors of Difficulties in Math and Reading in Pre-Kindergarten Children at High Risk for Learning Disabilities** *JOURNAL OF EDUCATIONAL PSYCHOLOGY*
  Barnes, M. A., Clemens, N. H., Fall, A., Roberts, G., Klein, A., Starkey, P., Mccandliss, B., Zucker, T., Flynn, K.
  2020; 112 (4): 685–700

- **Distinct Representations of Magnitude and Spatial Position within Parietal Cortex during Number-Space Mapping** *JOURNAL OF COGNITIVE NEUROSCIENCE*
  Kanayet, F. J., Mattarella-Micke, A., Kohler, P. J., Norcia, A. M., McCandliss, B. D., McClelland, J. L.
  2018; 30 (2): 200–218

- **Event-related potential differences in children supplemented with long-chain polyunsaturated fatty acids during infancy.** *Developmental science*
  Liao, K., McCandliss, B. D., Carlson, S. E., Colombo, J., Shaddy, D. J., Kerling, E. H., Lepping, R. J., Sittiprapaporn, W., Cheatham, C. L., Gustafson, K. M.
  2016

- **Effects of Tutorial Interventions in Mathematics and Attention for Low-Performing Preschool Children** *JOURNAL OF RESEARCH ON EDUCATIONAL EFFECTIVENESS*
  Barnes, M. A., Klein, A., Swank, P., Starkey, P., McCandliss, B., Flynn, K., Zucker, T., Huang, C., Fall, A., Roberts, G.

2016; 9 (4): 577-606

- **Does Music Training Enhance Literacy Skills? A Meta-Analysis** *FRONTIERS IN PSYCHOLOGY*
  Gordon, R. L., Fehd, H. M., McCandliss, B. D.
  2015; 6
- **Does Music Training Enhance Literacy Skills? A Meta-Analysis.** *Frontiers in psychology*
  Gordon, R. L., Fehd, H. M., McCandliss, B. D.
  2015; 6: 1777
- **Hemispheric specialization for visual words is shaped by attention to sublexical units during initial learning.** *Brain and language*
  Yoncheva, Y. N., Wise, J., McCandliss, B.
  2015; 145-146: 23-33
- **Hemispheric specialization for visual words is shaped by attention to sublexical units during initial learning** *BRAIN AND LANGUAGE*
  Yoncheva, Y. N., Wise, J., McCandliss, B.
  2015; 145: 23-33
- **Neuroimaging correlates of handwriting quality as children learn to read and write** *FRONTIERS IN HUMAN NEUROSCIENCE*
  Gimenez, P., Bugescu, N., Black, J. M., Hancock, R., Pugh, K., Nagamine, M., Kutner, E., Mazaika, P., Hendren, R., McCandliss, B. D., Hoeft, F.
  2014; 8
- **The emergence of "groupitizing" in children's numerical cognition** *Journal of experimental child psychology*
  Starkey, G. S., McCandliss, B. D.
  2014; 126: 120-137
- **Mise en place: Setting the stage for thought and action** *Trends in Cognitive Sciences*
  Weisberg, D. S., Hirsh-Pasek, K., Golinkoff, R. M., McCandliss, B. D.
  2014; 18 (6): 276-278
- **The cognitive mechanisms of the SNARC effect: an individual differences approach** *PloS one*
  Viarouge, A., Hubbard, E. M., McCandliss, B. D.
  2014; 9 (4): e95756
- **Selective attention to phonology dynamically modulates initial encoding of auditory words within the left hemisphere** *NeuroImage*
  Yoncheva, Y., Maurer, U., Zevin, J. D., McCandliss, B. D.
  2014; 97: 262-270
- **Orthographic influences on division of labor in learning to read Chinese and English: Insights from computational modeling** *Bilingualism: Language and Cognition*
  Yang, J., Shu, H., McCandliss, B. D., Zevin, J. D.
  2013; 16 (2): 354-366
- **Effects of rhyme and spelling patterns on auditory word ERPs depend on selective attention to phonology** *Brain and language*
  Yoncheva, Y. N., Maurer, U., Zevin, J. D., McCandliss, B. D.
  2013; 124 (3): 238-243
- **Neural systems predicting long-term outcome in dyslexia** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Hoeft, F., McCandliss, B. D., Black, J. M., Gantman, A., Zakerani, N., Hulme, C., Lyytinen, H., Whitfield-Gabrieli, S., Glover, G. H., Reiss, A. L., Gabrieli, J. D.
  2011; 108 (1): 361-366
- **Scientific and Pragmatic Challenges for Bridging Education and Neuroscience** *EDUCATIONAL RESEARCHER*
  Varma, S., McCandliss, B. D., Schwartz, D. L.
  2008; 37 (3): 140-152
- **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*
  Niogi, S., Mukherjee, P., Ghajar, J., Johnson, C., Kolster, R., Sarkar, R., Lee, H., Meeker, M., Zimmerman, R., Manley, G.
  2008; 29 (5): 967-973