

Christopher D. Erb

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PROFESSIONAL EXPERIENCE

- University of Auckland* 2018-Current
Senior Lecturer
School of Psychology
Director of the Cognitive, Manual, and Neural Dynamics (CMND) Lab
- University of North Carolina at Greensboro* 2015-2018
Post-Doctoral Fellow
Department of Psychology
Advisors: Dr. Stuart Marcovitch and Dr. Janet Boseovski

EDUCATION

- Brown University, Providence, RI* 2015
Ph.D. in Cognitive Science
Department of Cognitive, Linguistic, and Psychological Sciences
Dissertation: *Reach Tracking as an Online Measure of Cognitive Control in Children and Adults*
Advisor: Dr. David Sobel
- University of Cincinnati, Cincinnati, OH* 2010
B.A. in Psychology with a Minor in Philosophy
Summa Cum Laude
Psychology Department Honors
Distinguished University Honors Scholar
Phi Beta Kappa

RESEARCH FUNDING AWARDED

- Marsden Fund: Standard*, Royal Society of New Zealand. Project title: 'The neural dynamics of cognitive control: Theta-range neural oscillations and frontal executive function'. Involvement: Associate Investigator. Amount awarded: \$825,000 NZD. 2022-2025
- Seed Funding*, Digital Life Institute. Project title: 'Mind the gap: Using VR to compare AI and human intelligence'. Involvement: Associate Investigator. Amount awarded: \$14,027 NZD. 2021
- Faculty Research Development Funding – New Staff Research Fund*. University of Auckland. Project title: 'The developing mind in action: Tracking the cognitive, manual, and oculomotor dynamics of attention and control.' Involvement: Principal Investigator. Amount awarded: \$30,000 NZD. 2020-2022

- Seed Funding*, Digital Life Institute. Project title: ‘Tracking the dynamics of perception, action, and cognition in virtual environments’. Involvement: Principal Investigator. Amount awarded: \$9,625 NZD. 2020
- Marsden Fund: Fast-Start*, Royal Society of New Zealand. Project title: ‘Capturing the mind in action: Linking the behavioural and neural dynamics of cognitive control’. Involvement: Principal Investigator. Amount awarded: \$300,000 NZD. 2020-2023
- Small Grant for Early Career Scholars*, Society for Research in Child Development. 2019
- Regular Faculty Research Award*, Office of Research and Economic Development, University of North Carolina at Greensboro. Developed with and awarded to Dr. Stuart Marcovitch. 2015
- Proposal Preparation Program Award*, College of Arts and Sciences, University of North Carolina at Greensboro. 2015
- Peter D. Eimas Graduate Research Award*, Department of Cognitive, Linguistic, and Psychological Sciences, Brown University. 2014

MANUSCRIPTS UNDER REVIEW (*mentee)

- *Smith, K. A., *Morrison, S., Henderson, A. M. E., **Erb, C. D.** (in revision). Moving beyond response times: A simple solution for capturing response dynamics. *Nature: Scientific Reports*.

PUBLICATIONS (*mentee)

- Erb, C. D.**, Germine, L., & Hartshorne, J. K. (2022). Revisiting the inverted-U: Congruency tasks reveal divergent developmental trajectories. In *Proceedings of the Annual Meeting of the Cognitive Science Society*.
- Erb, C. D.**, Moher, J., & Marcovitch, S. (2022). Attentional capture in goal-directed action during childhood, adolescence, and early adulthood. *Journal of Experimental Child Psychology*, 214, 105273. <https://doi.org/10.1016/j.jecp.2021.105273>
- Erb, C. D.**, Welhalf, M., Smeekens, B. A., Moreau, D., Kane, M. J., & Marcovitch, S. (2021). Linking the dynamics of cognitive control to individual differences in working memory capacity: Evidence from reaching behavior. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 47(9), 1383–1402. <https://doi.org/10.1037/xlm0001018>
- Erb, C. D.** (2020). Additional considerations when measuring adaptive control in conflict tasks. (Commentary on Braem et al., 2019). *New Ideas in Psychology*, 58, 100778. <https://doi.org/10.1016/j.newideapsych.2019.100778>
- Erb, C. D.**, *Smith, K. A., & Moher, J. (2020). Tracking continuities in the flanker task: From continuous flow to movement trajectories. *Attention, Perception, & Psychophysics*. <https://doi.org/10.3758/s13414-020-02154-4>
- Erb, C. D.**, Touron, D. R., & Marcovitch, S. (2020). Tracking the dynamics of global and competitive inhibition in early and late adulthood: Evidence from the flanker task. *Psychology and Aging*, 35(5), 729-743. <https://doi.org/10.1037/pag0000435>
- Golovina, E., Vickers, M. H., **Erb, C. D.**, O’Sullivan, J. M. (2020). GWAS SNPs impact shared regulatory pathways amongst multimorbid psychiatric disorders and cognitive functioning. *Frontiers in Psychiatry: Behavioral and Psychiatric Genetics*. <https://doi.org/10.3389/fpsy.2020.560751>

- Erb, C. D.** & Aschenbrenner, A. J. (2019). Multiple expectancies underlie the congruency sequence effect in confound-minimized tasks. *Acta Psychologica*, *198*, 102869. <https://doi.org/10.1016/j.actpsy.2019.102869>
- Erb, C. D.** & Cavanagh, J. F. (2019). Layers of latent effects in cognitive control: An EEG investigation. *Acta Psychologica*, *195*, 1-11. <https://doi.org/10.1016/j.actpsy.2019.02.004>
- Erb, C. D.** & Marcovitch, S. (2019). Tracking the within-trial, cross-trial, and developmental dynamics of cognitive control: Evidence from the Simon task. *Child Development*, *90*(6), e831-e848. <https://doi.org/10.1111/cdev.13111>
- Erb, C. D.**, *McBride, A., & Marcovitch, S. (2019). Associative priming and conflict differentially affect two processes underlying cognitive control: Evidence from reaching behavior. *Psychonomic Bulletin & Review*, *26*, 1400-1410. <https://doi.org/10.3758/s13423-019-01576-y>
- Erb, C. D.** (2018). The developing mind in action: Measuring manual dynamics in childhood. *Journal of Cognition and Development*, *19*, 233-247. <https://doi.org/10.1080/15248372.2018.1454449>
- Erb, C. D.** & Marcovitch, S. (2018). Deconstructing the Gratton effect: Targeting dissociable trial sequence effects in children, pre-adolescents, and adults. *Cognition*, *179*, 150-162. <https://doi.org/10.1016/j.cognition.2018.06.007>
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2018a). Numerical cognition in action: Reaching behavior reveals numerical distance effects in 5- to 6-year-olds. *Journal of Numerical Cognition*, *4*(2), 286-296. <https://doi.org/10.5964/jnc.v4i2.122>
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2018b). Reach tracking reveals dissociable processes underlying inhibitory control in 5- to 10-year-olds and adults. *Developmental Science*, *21*(2), e12523. <https://doi.org/10.1111/desc.12523>
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2017). Cognitive control in action: Tracking the dynamics of rule switching in 5- to 8-year-olds and adults. *Cognition*, *164*, 163-173. <https://doi.org/10.1016/j.cognition.2017.03.023>
- Sobel, D. M., **Erb, C. D.**, Tassin, T., & Weisberg, D. S. (2017). The development of diagnostic inference about uncertain causes. *Journal of Cognition and Development*, *18*(5), 556-576. <https://doi.org/10.1080/15248372.2017.1387117>
- Erb, C. D.**, Moher, J., Sobel, D. M., & Song, J-H. (2016). Reach tracking reveals dissociable processes of cognitive control. *Cognition*, *152*, 114-126. <https://doi.org/10.1016/j.cognition.2016.03.015>
- Erb, C. D.** & Sobel, D. M. (2014). The development of diagnostic reasoning about uncertain events between ages 4–7. *PLoS ONE*, *9*(3), e92285. <https://doi.org/10.1371/journal.pone.0092285>
- Erb, C. D.**, Buchanan, D. W., & Sobel, D. M. (2013). Children's developing understanding of the relation between variable causal efficacy and mechanistic complexity. *Cognition*, *129*(3), 494-500. <https://doi.org/10.1016/j.cognition.2013.08.002>
- Fernbach, P. M. & **Erb, C. D.** (2013). A quantitative causal model theory of conditional reasoning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *39*(5), 1327-1343. <https://doi.org/10.1037/a0031851>
- Erb, C. D.**, & Kloos, H. (2010). Signs of non-linearity in base-rate neglect. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 495-500). Austin, TX: Cognitive Science Society.

HONORS, AWARDS, AND SCHOLARSHIPS

<i>Faculty Teaching Development Fund</i> , Faculty of Science, University of Auckland	2022
<i>Early Career Excellence in Teaching Award</i> , Faculty of Science, University of Auckland	2021
<i>Summer Seminar Attendee</i> , Philosophy and Science of Self-Control Project, Florida State University	2017
<i>Dissertation Fellowship</i> , Graduate School, Brown University	2014-2015
<i>The Claire E. Hubert Award for Outstanding Male Graduate</i> , Psychology Department, University of Cincinnati	2010
<i>The Arthur Bills Award for Outstanding Research</i> , Psychology Department, University of Cincinnati	2010
<i>Weinberger Scholarship Award</i> , Phi Beta Kappa, University of Cincinnati	2010
<i>Graduate School Summer Research Program for Exceptional Undergraduate Grant</i> , Graduate School, University of Cincinnati	2009
<i>Melba Wuenschl Scholarship Award</i> , Phi Beta Kappa, University of Cincinnati	2009
<i>Debeck-Grasha Scholarship</i> , Psychology Department, University of Cincinnati	2008

PRESENTATIONS

Symposia Organized

VR/XR in the Knowledge Sciences. Hosted by the Knowledge Science Theme at the University of Auckland (2019, October). Co-organized with Dr. Danielle Lottridge.

New Approaches to Studying Executive Functions. The Eighth Biennial Meeting of the Cognitive Development Society, Memphis, TN (2013, October). Featuring Anna Fisher, Dima Amso, Christopher Erb, and Yuko Munakata.

Oral Presentations

Erb, C. D., Moher, J., & Marcovitch, S. (2021, November). *Attentional capture in goal-directed action during childhood, adolescence, and early adulthood*. Presentation at the Australasian Human Development Association Online Conference.

Erb, C. D. Welhalf, M., Smeekens, B. A., Moreau, D., Kane, M. J., & Marcovitch, S. (2021, April). *Linking the dynamics of cognitive control to individual differences in working memory capacity: Evidence from reaching behavior*. Presentation at the annual meeting of the Australasian Experimental Psychology Society.

Erb, C. D. (2019, October). *Measuring the mind in action with reach tracking*. Presentation at the Australasian Human Development Association Online Conference.

Erb, C. D., Touron, D., & Marcovitch, S. (2019, March). *Tracking the within- and cross-trial dynamics of interference control across the lifespan: Insights from reaching behavior*. Presentation at the International Convention of Psychological Science, Paris, France.

Erb, C. D. (2018, May). *Targeting the within-trial, cross-trial, and developmental dynamics of cognitive control with reach tracking*. Presentation at the 30th Annual Convention of the Association for Psychological Science, San Francisco, CA.

- Erb, C. D.**, Moher, J., Song, J-H., Marcovitch, S., & Sobel, D. M. (2017, April). *Reaching behavior reveals dissociable inhibitory processes with divergent developmental trajectories*. Presentation at the Biennial Meeting of the Society for Research in Child Development, Austin, TX.
- Erb, C. D.**, Moher, J., Song, J-H., Sobel, D. M., & Marcovitch, S. (2017, March). *Continuous hand movements reveal cognitive dynamics underlying conflict detection and resolution*. Presentation at the Annual Meeting of the North Carolina Cognition Group, Greensboro, NC.
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2013, October). *Reach trajectory tracking as an online measure of executive control*. Presentation at the Biennial Meeting of the Cognitive Development Society, Memphis, TN.
- Erb, C. D.**, & Kloos, H. (2010). *Signs of non-linearity in base-rate neglect*. Presentation at the 32nd Annual Conference of the Cognitive Science Society, Portland, OR.

Invited Talks

- Victoria University of Wellington, School of Psychology (May, 2022)
- University of Auckland, School of Psychology (April, 2018)
- University of Toronto Mississauga, Psychology Department (January, 2018)
- Wake Forest University, Seminar in Self-Regulation+ (September, 2017).
- University of North Carolina at Greensboro, Hard Data Café (April, 2017).
- Duke University, Egner Lab (November, 2015).
- University of North Carolina at Greensboro, D.U.C.K. Lab (July, 2015).
- Ohio State University, Cognitive Development Lab (January, 2015).
- University of Colorado Boulder, Cognitive Development Center (October, 2014).

*Selected Poster Presentations (*mentee)*

- Erb, C. D.**, Moher, J., & Marcovitch, S. (2019, October). *Attentional capture in goal-directed action during childhood, adolescence, and early adulthood*. Presented at the Tenth Biennial Meeting of the Cognitive Development Society, Louisville, KY.
- Caporaso, J. S., Bettencourt, K. M., Marble, K. E., Boseovski, J. J., Pathman, T., **Erb, C. D.**, Scales, M., & Marcovitch, S. (October, 2019). *'Tamanduas are smellier than a skunk!': Children's learning preferences and memory in a natural science center*. Presented at the Tenth Biennial Meeting of the Cognitive Development Society, Louisville, KY.
- Moher, J., **Erb, C. D.**, & Marcovitch, S. (2018, May). *Reaching behavior reveals outsized impact of distractor salience and selection history in young children*. Presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.
- Erb, C. D.**, *McBride, A., & Marcovitch, S. (2017, October). *Targeting the dynamics of cognitive control across development: Evidence from reaching behavior in the Simon task*. Presented at the Ninth Biennial Meeting of the Cognitive Development Society, Portland, OR.
- *McBride, A., **Erb, C. D.**, Moher, J., & Marcovitch, S. (2017, March). *Tracking the development of cognitive control in the Simon task one reach at a time*. Presented at the 2017 Annual Meeting of the North Carolina Cognition Group, Greensboro, NC.

- *Caparaso, J., **Erb, C. D.**, & Marcovitch, S. (2017, March). *Does negative priming drive perseverative sorting in the pre-school years?* Presented at the 2017 Annual Meeting of the North Carolina Cognition Group, Greensboro, NC.
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2015, March). *Reaching behavior reveals dissociable processes underlying cognitive control in flanker task.* Presented at the 2015 Biennial Meeting of the Society for Research in Child Development, Philadelphia, PA.
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2015, March). *Reaching behavior in numeric comparison task reflects mental number line in 5- to 6-year-olds.* Presented at the 2015 Biennial Meeting of the Society for Research in Child Development, Philadelphia, PA.
- Erb, C. D.**, Moher, J., Song, J-H., & Sobel, D. M. (2013, November). *Measuring the development of online cognitive control in the flanker task.* Presented at workshop on Learning to Attend, Attending to Learn, San Diego, CA.
- Erb, C. D.**, Cushman, F. (2013, June). *Representing Process in Cases of Double Prevention.* Presented at 39th Meeting of the Society for Philosophy and Psychology, Providence, RI.
- Erb, C. D.**, & Sobel, D. M. (2013, April). *The development of diagnostic reasoning between ages 3-7.* Presented at the 2013 Biennial Meeting of the Society for Research in Child Development, Seattle, WA.
- Erb, C. D.**, & Sobel, D. M. (2011, October). *Three-year-olds' flexible rule use in a causal reasoning task.* Presented at the Seventh Biennial Meeting of the Cognitive Development Society, Philadelphia, PA.
- Erb, C. D.**, Patel, K. V., Allendorfer, J. B., Lamy, M., Cerullo, M. A., Nelson, E. B., Eliassen, J. C., & Smith, M. S. (2010, May). *fMRI Brain Activation During Associative Learning in Major Depressive Disorder.* Presented at the Ohio Miami Valley Chapter of the Society for Neuroscience 2010 Neuroscience Day, Cincinnati, OH.

TEACHING EXPERIENCE AND TRAINING

Lecturer in PSYCH 200: <i>Foundations of Developmental Psychology.</i> University of Auckland.	2020-Current
Lecturer in PSYCH 764: <i>Dual-Process Theories of Human Cognition.</i> University of Auckland.	2019-Current
Lecturer in PSYCH 326: <i>Life Span Development.</i> University of Auckland.	2019-2020
Lecturer in PSYCH 109: <i>Mind, Brain, and Behaviour.</i> University of Auckland.	2019-Current
Instructor for PSY 250: <i>Developmental Psychology.</i> UNC Greensboro.	2017
Instructor for PSY 735: <i>Dual-Process Theories in Cognitive, Developmental, and Social Psychology.</i> Graduate-level course at UNC Greensboro.	2016
Instructor for PSY 280: <i>Cognitive Psychology.</i> UNC Greensboro.	2016
Co-Instructor for <i>Developing Minds</i> , an intensive two-week pre-college course for high school students at Brown University. Co-Instructor: Deanna Macris	2014
Completed the <i>Sheridan Center for Teaching and Learning's Certificate III</i> program on Professional Development	2014
Teaching Assistant for CLPS0610: <i>Children's Thinking.</i> Brown University. Instructor: Dr. David Sobel	2013

Completed the <i>Sheridan Center for Teaching and Learning's Certificate I</i> program on Reflective Teaching	2012
Teaching Assistant for CLPS0610: <i>Children's Thinking</i> . Brown University. Instructor: Dr. David Sobel	2012
Teaching Assistant for CLPS0700: <i>Social Psychology</i> . Brown University. Instructor: Dr. Fiery Cushman	2012
Teaching Assistant for CLPS0610: <i>Children's Thinking</i> . Brown University. Instructor: Dr. James Morgan	2011

PROFESSIONAL SERVICE

Reviewer (ad hoc) for *Attention, Perception, & Psychophysics, Child Development, Cognition, Cognitive Development, Cortex, Developmental Psychology, Developmental Science, Journal of Cognition and Development, Journal of Experimental Child Psychology, Journal of Experimental Psychology: General, Journal of Experimental Psychology: Human Perception and Performance, Nature: Scientific Reports, Psychological Research, Thinking & Reasoning, Translational Issues in Psychological Science, and Trends in Cognitive Sciences*.

Steering Committee Member for the Knowledge Sciences Research Theme at the University of Auckland (2019-Present).

Reviewer for NZ Ministry of Social Development Policy Brief entitled, 'Early Self-Control Development' (2019).

ADDITIONAL RESEARCH FUNDING SOUGHT

<i>Marsden Fund</i> , Royal Society of New Zealand (2022). Project title: 'Mind the Gap: Using Virtual Reality to Connect Embodied Cognitive Science and Artificial Intelligence Research'. Involvement: Associate Investigator. EOI unsuccessful.	2022
<i>Marsden Fund</i> , Royal Society of New Zealand (2021). Project title: 'Mind the Gap: Using Virtual Reality to Compare Artificial and Human Intelligence'. Involvement: Associate Investigator. EOI unsuccessful.	2021
<i>Centre of Research Excellence (CoRE) Application</i> , Tertiary Education Commission of New Zealand. Project title: 'Digital Life'. Involvement: Associate Investigator.	2019
<i>R21</i> , U.S. National Institute of Health. Project title: 'Targeting developmental and individual differences in inhibitory control with manual dynamics'. Involvement: Principal Investigator.	2018
<i>National Research Service Award Fellowship</i> , U.S. National Institute of Health. Project title: 'Investigating dissociable inhibitory mechanisms in executive function'. Involvement: Principal Investigator.	2015
<i>Graduate Research Fellowship Program</i> , U.S. National Science Foundation. Honorable Mention.	2012