

Denise Werchan, Ph.D.

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EMPLOYMENT

- 2020 – Present Post-Doctoral Research Fellow
Department of Population Health
Department of Child & Adolescent Psychiatry
New York University School of Medicine, New York, NY
- 2019 – 2020 Post-Doctoral Research Scientist
Department of Cognitive, Linguistic, & Psychological Sciences
Brown University, Providence, RI

EDUCATION

- 2020 Ph.D., Cognitive Science
Brown University, Providence, RI
- 2016 Sc.M., Psychology
Brown University, Providence, RI
- 2011 B.S., Psychology with Honors, *Summa Cum Laude*
University of Arizona, Tucson, AZ

RESEARCH AREA

- Brain and Cognitive Development in Infancy and Childhood
- Environmental Shaping of Executive Functions and Prefrontal Cortex
- Contextual Influences on Attention, Learning, and Executive Functions

SELECTED AWARDS & FUNDING

- 2021 Travel Award – *International Society for Developmental Psychobiology*
- 2020 Student Investigator Award – *International Society for Developmental Psychobiology*
- 2020 Dissertation Award – *FLUX Society for Developmental Cognitive Neuroscience*

2018-19	Robin Chemers Neustein Graduate Award in Brain Science – <i>Brown University Carney Institute for Brain Science</i>
2017-18	Betty R.H. and James M. Pickett Fellowship Fund – <i>Brown University</i>
2017	Newton International Fellowship – <i>The British Society/The University of Cambridge (declined)</i>
2016	Travel Award – <i>International Congress of Infant Studies</i>
2013-16	National Science Foundation Graduate Research Fellowship
2014	Travel Award – <i>International Society for Developmental Psychobiology</i>
2013-14	Graduate Research Fellowship – <i>Brown University</i>
2013	Sackler Developmental Psychobiology Fellowship – <i>Cornell University</i>
2013	Travel Award – <i>Sleep Research Society</i>
2012-13	Harvill Graduate Research Grant – <i>The University of Arizona</i>
2012	Excellence in Research Award – <i>The University of Arizona</i>
2012	William James Award – <i>The University of Arizona Department of Psychology</i>
2012	Galileo Circle Scholarship – <i>The University of Arizona</i>
2012	Phi Beta Kappa Society
2011	Undergraduate Research Grant – <i>The University of Arizona</i>
2011	William C. Dement Sleep Research Fellowship – <i>Brown University</i>

PUBLICATIONS

1. Thomason, M. E., **Werchan, D. M.**, & Hendrix, C. L. (in press). COVID-19 patient accounts of illness severity, treatments and lasting symptoms. *Scientific Data*.
2. Thomason, M. E., Palopoli, A. C., Jariwala, N. N., **Werchan, D. M.**, Chen, A., Adhikari, S., Espinoza-Heredia, C., Brito, N. H., & Trentacosta, C. J. (2021). Miswiring the brain: Human prenatal $\Delta 9$ -tetrahydrocannabinol use associated with altered fetal hippocampal brain network connectivity. *Developmental Cognitive Neuroscience*.
3. **Werchan, D. M.** & Amso, D. (2021). All contexts are not created equal: Social stimuli win the competition for organizing reinforcement learning in 9-month-old infants. *Developmental Science*.
4. **Werchan, D. M.**, Kim, J., & Gómez, R. L. (2021). A Daytime Nap Combined with Nighttime Sleep Promotes Learning in Toddlers. *Journal of Experimental Child Psychology*.

5. **Werchan, D. M.** & Amso, D. (2020). Adaptive Rule Learning of Event Sequences During the A-not-B Task in 9-Month-Old Infants. *Developmental Psychobiology*.
6. **Werchan, D. M.** & Amso, D. (2020). Top-Down Knowledge Rapidly Acquired Through PFC-Dependent Rule Learning Biases Visual Attention in 9-Month-Old Infants. *Developmental Cognitive Neuroscience*.
7. **Werchan, D. M.**, Lynn, A., Baumgartner, H., Kirkham, N. Z., & Amso, D. (2019). The Emergence of Object-Based Visual Attention in Infancy: A Role for Family Socioeconomic Status and Competing Visual Features. *Infancy*.
8. **Werchan, D. M.**, Baumgartner, H., Lewkowicz, D. & Amso, D. (2018). The Origins of Cortical Multisensory Dynamics: Evidence From Human Infants. *Developmental Cognitive Neuroscience*.
9. **Werchan, D. M.** & Amso, D. (2017). A Novel Ecological Model of Prefrontal Cortex Functional Development. *Psychological Review*, 24(6), 720-739.
10. **Werchan, D. M.**, Collins, A. G. E, Frank, M. J., & Amso, D. (2016). Role of Prefrontal Cortex in Learning and Generalizing Hierarchical Rules in 8-Month-Old Infants. *The Journal of Neuroscience*, 36(40), 10314-10322.
11. Simon, K. N. S., **Werchan, D. M.**, Goldstein, M., Sweeney, L., Bootzin, R. R., Nadel, L., & Gómez, R. L. (2016). Sleep and Statistical Language Learning: Insights into Cortical Development and Retention in 6.5-Month-Olds. *Brain & Language*, 167, 3-12.
12. **Werchan, D. M.**, Collins, A. G. E, Frank, M. J., & Amso, D. (2015). Eight-Month-Old Infants Spontaneously Learn and Generalize Hierarchical Rules. *Psychological Science*, 26(6), 805-15.
13. **Werchan, D. M.** & Gómez, R. L. (2014). Wakefulness (Not Sleep) Promotes Generalization of Word Learning in 2.5-Year-Old Children. *Child Development*, 85(2), 429-436.
14. **Werchan, D. M.** & Gómez, R.L. (2013). Generalizing Memories Over Time: Reinforcement and Sleep Facilitate Transitive Inference. *Neurobiology of Learning and Memory*, 100, 70-76.

MANUSCRIPTS UNDER REVIEW OR IN REVISION

15. **Werchan, D. M.**, Ku, S., Berry, D., & Blair, C. (in revision). Sensitive Caregiving and Reward Responsivity: A Novel Mechanism Linking Parenting and Executive Functions Development in Early Childhood. *Developmental Science*.
16. **Werchan, D. M.**, Hendrix, C. L., Austin, A., ... Thomason, M. E., & Brito, N. H. (in revision). Behavioral coping phenotypes associated with risk and resilience to adverse outcomes in a national U.S. sample of pregnant and postpartum women during the COVID-19 pandemic. *Scientific Reports*.

17. Gunther, K. E., **Werchan, D. M.**, Anaya, B., Vallorani, A., Pérez-Edgar, K., & Amso, D (under review). Maternal buffering of neural and attentional responses to emotionally valenced stimuli in infancy. *Infant Behavior and Development*.
18. Brito, N. H., **Werchan, D. M.**, Brandes-Aitken, A., Greaves, A., Zhang, M. Paid Maternal Leave is Associated with Infant Brain Function at 3-Months of Age. (under review). *Child Development*.

INVITED TALKS

May 2021	T32 Fellowship Seminar, Department of Psychiatry, Columbia University Irving Medical Center
November 2020	International Society for Developmental Psychobiology, Student Investigator Award talk
September 2020	FLUX Congress for Developmental Cognitive Neuroscience, Dissertation Award talk.
January 2020	Department of Psychology, University of Texas - Dallas
January 2020	Department of Psychology, University of Oregon
January 2019	Department of Psychology, Columbia University
December 2018	Department of Psychology, University of Toronto
December 2018	Department of Psychology, Carnegie Mellon University
November 2018	Department of Psychology, Stanford University
October 2018	Department of Psychology, Boston College
October 2018	Department of Psychology, Harvard University
September 2018	SaxeLab, Massachusetts Institute of Technology

PRESENTATIONS

Conference talks

1. Werchan, D.M., Thomason, M. E. Brito, N. H., VanTieghem, M. et al. (2021, April). *COVID-19 and Perinatal Experiences: Individual differences in coping strategies predict emotional wellbeing in perinatal women*. Talk presented at the biennial meeting for the Society for Research in Child Development, virtual meeting.

2. Hendrix, C. L., Werchan, D. M., Lenniger, C. J., Austin, A. C., Brito, N. H., & Thomason, M. E. (2021, April). *Geographic Variability in Perinatal Care Disruptions as a Consequence of COVID-19*. Talk presented at the biennial meeting for the Society for Research in Child Development, virtual meeting.
3. Werchan, D.M., Collins, A. G. E., Frank, M. J., & Amso, D. (2016, May). *8-Month-Old Infants Create Hierarchical Rules to Support Learning and Generalization in Novel Contexts*. Talk presented at the International Congress of Infant Studies, New Orleans, LA.
4. Werchan, D.M., Kim, J., & Gomez, R. L. (2016, May). *Nighttime Sleep Enhances Preschoolers' Long-Term Generalization of Word Learning*. Talk presented at the International Congress of Infant Studies, New Orleans, LA.
5. Newman-Smith, K., Werchan, D.M., Bootzin, R., Nadel, L., & Gomez, R.L. (2015, March). *Retention of Statistical Learning in 6.5-Month-Old Infants*. Talk presented at the Society for Research in Child Development biennial meeting, Philadelphia, PA.
6. Werchan, D.M., Collins, A. G. E., Frank, M. J., & Amso, D. (2014, November). *The development of hierarchical rule learning and generalization in infancy*. Talk presented at the Society for Neuroscience, Washington, DC.
7. Werchan, D.M., Collins, A. G. E, Frank, M. J., & Amso, D. (2014, September). *The early emergence of hierarchical rule learning*. Talk presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Los Angeles, CA.
8. Werchan, D.M., & Gomez, RL. (2013, April). *Wake (not sleep) promotes generalization of word learning in toddlers*. Talk presented at the biennial meeting of the Society for Research in Child Development, Seattle, WA.

Conference posters

1. Werchan, D.M., Brandes-Aitken, A., Ku, S. & Blair, C. (2021, November). *Naturalistic patterns of attention during shared book reading in early childhood: longitudinal trajectories and associations with emerging executive functions*. Poster to be presented at the annual meeting for the International Society for Developmental Psychobiology.
2. Werchan, D.M., Hendrix, C., Thomason, M. E., & Brito, N. H. (2021, November). *Infant visual attention and maternal depression: a novel remote assessment for examining longitudinal impacts of the COVID-19 pandemic on infant development*. Poster to be presented at the annual meeting for the International Society for Developmental Psychobiology.
3. Hume, A., Werchan, D.M., Hendrix, C., Thomason, M. E., & Brito, N. H. (2021, November). *COVID-19 perinatal care disruptions, maternal depression, and subsequent infant outcomes: investigating longitudinal associations and protective factors*. Poster to be presented at the annual meeting for the International Society for Developmental Psychobiology.

4. Zhang, M., Werchan, D.M., Thomason, M. E., & Brito, N. H. (2021, November). *Examining infant attention in relation to mother infant behavioral synchrony*. Poster to be presented at the annual meeting for the International Society for Developmental Psychobiology.
5. Martino, R.M., Amso, D. & Werchan, D.M. (2021, April). *Acquisition of Gender STEM Stereotypes through Reinforcement Learning in School-Age Children*. Poster presented at the biennial meeting for the Society for Research in Child Development, virtual meeting.
6. Martino, R.M., Amso, D. & Werchan, D.M. (2020, September). *Acquisition of Gender STEM Stereotypes through Reinforcement Learning in School-Age Children*. Poster presented at the Flux Congress for Developmental Cognitive Neuroscience, virtual meeting.
7. Werchan, D.M., Gordon, L., & Amso, D. (2019, October). *Top-down activation in mid-level visual regions supports efficient object perception in 8-10-month-old infants*. Poster presented at the Biennial Conference of the Cognitive Development Society, Louisville, KY.
8. Werchan, D.M. & Amso, D. (2018, September). *Abstract Rule Learning Supports the Development of Visual Attentional Biases in 9-Month-Old Infants*. Poster presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Berlin, Germany.
9. Placido, D., Nketia, J., Werchan, D.M. & Amso, D. (2018, September). *Exploring the effects of emotional enrichment on components of executive functions in children of varying socioeconomic status*. Poster presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Berlin, Germany.
10. Novick, A. M., Werchan, D.M., Amso, D., Parade, S. H., Ackerman, L, Gunther, K., Seifer, R., Philip, N. S., & Tyrka, A. R. (2018, May). *Cognitive and Affective Function in School-Aged Children Experiencing Trauma and Adversity*. Poster presented at the 73rd Annual Meeting of the Society of Biological Psychiatry, New York, NY.
11. Werchan, D.M., Gunther, K., & Amso, D. (2017, September). *9-Month-Old Infants use Higher-Order Contexts to Support Working Memory in the A-Not-B Task*. Poster presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Portland, OR.
12. Werchan, D.M., Baumgartner, H., Martino, R., Lewkowicz, D. & Amso, D. (2017, April). *Unisensory and Multisensory Processing in Cortex*. Poster presented at the Society for Research in Child Development, Austin, TX.
13. Werchan, D.M., Gunther, K., & Amso, D. (2017, April). *9-Month-Old Infants use Contextual Cues to Support Working Memory in the A-Not-B Task*. Poster presented at the Society for Research in Child Development, Austin, TX.
14. Baumgartner, H, Werchan, D.M., Lewkowicz, D. & Amso, D. (2016, September). *Cortical Plasticity and Specialization in Response to Multimodal Events in Infancy*. Poster presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, St. Louis, MO.

15. Werchan, D.M., Collins, A. G. E., Frank, M. J., & Amso, D. (2015, September). *Activation of prefrontal cortex during hierarchical rule learning in 8-month-old infants: data from near-infrared spectroscopy*. Poster presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Leiden, The Netherlands.
16. Werchan, D.M., Collins, A. G. E, Frank, M. J., & Amso, D. (2014, November). *Hierarchical rule learning and generalization in infancy*. Poster presented at the annual meeting of the International Society for Developmental Psychobiology, Washington, DC.
17. Newman-Smith, K., Werchan, D.M., Goldstein, M., Bootzin, R., Nadel, L., & Gomez, R.G. (2014, June). *A nap and its relationship to consolidation and retention of new learning in 6.5-month-olds*. Poster presented at the annual meeting of the Society for Sleep Research, Minneapolis, MN.
18. Werchan, D.M., & Gomez, RL. (2013, June). *Wake (not sleep) enhances preschool age children's generalization of word learning*. Poster presented at the annual meeting of the Society for Sleep Research, Baltimore, MD.
19. Werchan, D.M., & Gomez, RL. (2013, June). *Integrating memories over time: reward mediates the formation of inferences during sleep*. Poster presented at the annual meeting of the Society for Sleep Research, Baltimore, MD.
20. Werchan, D.M., & Gomez, RL. (2013, April). *The role of sleep and reinforcement in memory integration*. Poster presented at the annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.
21. Werchan, D.M., & Gomez, RL. (2012, October). *The effects of sleep and reinforcement on transitive inference*. Poster presented at the annual meeting of the Society for Neuroscience, New Orleans, LA.

TEACHING EXPERIENCE

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| 2020 | Guest Lecturer, "Attention Development", Graduate Cognitive Development Seminar
New York University, Department of Applied Psychology |
| 2019 | Guest Lecturer, "fNIRS in Developmental Research", Psycholinguistics Laboratory
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences |
| 2018 | Guest Lecturer, "fNIRS Applications in Linguistics", Psycholinguistics Laboratory
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences |
| 2016 | Teaching Assistant, Statistics for the Behavioral Sciences
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences |
| 2015 | Guest Lecturer, "Neurodevelopmental Disorders", Elementary Psychology
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences |

- 2015 Teaching Assistant, Elementary Psychology
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences
- 2015 Laboratory Instructor, Elementary Psychology
Brown University, Department of Cognitive, Linguistics, and Psychological Sciences
- 2014 Teaching Assistant, Introduction to Cognitive Science
Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.
- 2011-12 Teaching Assistant, Scientific Computing in Python
The University of Arizona, Department of Computer Science
- 2011-12 Laboratory Instructor, Scientific Computing in Python
The University of Arizona, Department of Computer Science

PROFESSIONAL SERVICE

Ad-hoc Reviewer

Child Development • Developmental Science • Brain Sciences • Developmental Psychology • Science Advances • Journal of Cognitive Neuroscience • Cognitive Development • Journal of Experimental Psychology – General • Developmental Cognitive Neuroscience • Emotion • Child Neuropsychology • Journal of Vision

Service to School and Department

- 2015-17 Graduate Student Representative
Brown University Department of Cognitive, Linguistics, and Psychological Sciences
- 2012-13 Psychology Colloquium Committee Member
The University of Arizona Psychology Department

Science Communication & Outreach

- 2021 Program Development & Evaluation Scientific Committee Member
The Social Creatures Applied Research Non-Profit
- 2014-19 Annual Volunteer, Brain Week RI Brain Fair, Brown University
- 2016 Organizer, Communicating Science to Society
Brown University Friedman Family Fund Lecture Series
- 2015 STEM Workshop Leader, The Brain 101
Girl Scouts of America Senior Leadership Conference

Professional Memberships

FLUX Society for Developmental Cognitive Neuroscience • International Society for Developmental Psychobiology • Society for Research in Child Development • International Congress of Infant Studies

MEDIA COVERAGE

2021 The Atlantic - *The Isolation of New Parenthood During the Pandemic*

2016 Science Daily - *Infants Use Prefrontal Cortex in Learning*

2014 Psychology Today - *Learning and Sleep in Toddlers*

OTHER TRAINING

2016 Teaching Certificate 1: Reflective Teaching
Brown University Sheridan Center for Teaching and Learning

2016 Functional Near-Infrared Spectroscopy (fNIRS) Course
Harvard University Martinos Institute for Biomedical Engineering