

Denise M. Werchan

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EDUCATION

- PhD in Cognitive Science, Brown University** 2019
NSF Graduate Research Fellow
Committee: Dr. Dima Amso (chair), Dr. Michael Frank, & Dr. Kevin Bath
- ScM in Psychology, Brown University** 2013 – 2015
Thesis: Hierarchical Rule Learning and Generalization in 8-Month-Old Infants
- BS in Psychology with Honors, The University of Arizona** 2009 – 2012
Summa Cum Laude; Excellence in Research Award; Phi Beta Kappa Society

RESEARCH TRAINING

- PhD Graduate Student Researcher** 2013 – present
Developmental Cognitive Neuroscience Lab, Brown University
Director: Dr. Dima Amso
- Functional Near-Infrared Spectroscopy (fNIRS) Training Course** 2015
Martinos Institute for Biomedical Engineering at Harvard University
- Research Assistant** 2009 – 2013
Child Cognition Lab, The University of Arizona
Director: Dr. Rebecca Gómez
- Research Assistant** 2012
Memory Development and Disorders Lab, The University of Arizona
Director: Dr. Jamie Edgin

SELECTED HONORS, AWARDS & FUNDING

- Robin Chemers Neustein Graduate Award in Brain Science 2018 – 2019
- Betty R.H. and James M. Pickett Fellowship Fund in Psychology 2017 – 2018
- Newton International Fellowship, The University of Cambridge (*declined*) 2017
~1% funding rate for PhD students in humanities, social sciences, and life sciences

Travel Award, International Congress of Infant Studies	2016
National Science Foundation Graduate Research Fellowship	2013 – 2016
Travel Award, International Society for Developmental Psychobiology	2014
Graduate Research Fellowship, Brown University	2013 – 2014
Sackler Developmental Psychobiology Fellowship, Cornell University	2013
Travel Award, Sleep Research Society	2013
Harvill Graduate Research Grant, The University of Arizona	2012 – 2013
Excellence in Research Award, The University of Arizona College of Science	2012
William James Award, The University of Arizona Department of Psychology (highest departmental honor granted to one graduating senior)	2012
Galileo Circle Scholarship for Excellence in Research, The University of Arizona	2012
Phi Beta Kappa Society	2012
Undergraduate Research Grant, The University of Arizona	2011
William C. Dement Sleep Research Fellowship, Brown University	2011

PUBLICATIONS

1. **Werchan, D.M.** & Amso, D. (under review). Adults Just Don't Understand: The A-Not-B Error Reflects Online Reinforcement Learning About Task Dynamics. *Developmental Cognitive Neuroscience*.
2. **Werchan, D.M.**, Lynn, A., Baumgartner, H., Kirkham, N.Z., & Amso, D. (in revision). The Emergence of Object-Based Visual Attention in Infancy: A Role for Family Socioeconomic Status and Competing Visual Features. *Infancy*.
3. **Werchan, D.M.**, Novick, A., Ackerman, L., Gunther, K., Parade, S.H., Seifer, R., Philip, N.S., Amso, D., & Tyrka, A.R. (in revision). Cognitive and Affective Function In School-Age Children Experiencing Trauma and Adversity. *Child Neuropsychology*.
4. **Werchan, D.M.**, Kim, J., & Gómez, R.L. (in revision). A Daytime Nap Combined with Nighttime Sleep Leads to Delayed Benefits for Learning in Toddlers. *Journal of Experimental Child Psychology*.
5. **Werchan, D.M.**, Baumgartner, H., Lewkowicz, D. & Amso, D. (2018). The Origins of Cortical Multisensory Dynamics: Evidence From Human Infants. *Developmental Cognitive Neuroscience*.
6. **Werchan, D.M.** & Amso, D. (2017). A Novel Ecological Model of Prefrontal Cortex Functional Development. *Psychological Review*, 24(6), 720-739.

7. **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.
8. Newman-Smith, K., **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.
9. **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), 805-815.
10. **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.
11. **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.

REFEREED ABSTRACTS

1. **Werchan, D.M.** & Amso, D. (2018, September). *Rule Learning Supports the Development of Visual Attentional Biases in 9-Month-Old Infants*. Poster to be presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Berlin, Germany.
2. 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 to be presented at the Flux Congress on Integrative Developmental Cognitive Neuroscience, Berlin, Germany.
3. 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.
4. **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.
5. **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.
6. **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.

7. 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.
8. **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.
9. **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.
10. Newman-Smith, K., **Werchan, D.M.**, Bootzin, R., Nadel, L., & Gomez, R.L. (2015, October). *Retention of Statistical Learning in 6.5-Month-Old Infants*. Talk presented at the annual meeting of the Society for Neuroscience, Chicago, IL.
11. **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.
12. 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, Philadelphia, PA.
13. **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.
14. **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.
15. **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.
16. 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.
17. **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.

18. **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.
19. **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.
20. **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.
21. **Werchan, D.M., & Gomez, RL.** (2012, December). *Forgetting promotes generalization of word learning in preschool age children.* Poster presented at the University of Arizona/Arizona State University Cognitive Science Conclave, Phoenix, AZ.
22. **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

Guest Lecturer , “Using fNIRS in Psychology Research”, Lab in Psycholinguistics Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.	2018
Teaching Certificate 1: Reflective Teaching Brown University Sheridan Center for Teaching and Learning	2016
Teaching Assistant , Statistics for the Behavioral Sciences Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.	2016
Guest Lecturer , “Neurodevelopmental Disorders”, Elementary Psychology Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.	2015
Teaching Assistant/Section Leader , Elementary Psychology Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.	2015
Grader , Introduction to Cognitive Science Brown University, Cognitive, Linguistics, and Psychological Sciences Dept.	2014
Teaching Assistant/Section Leader , Scientific Computing in Python The University of Arizona, Computer Science Department	2011 – 2012

SERVICE & OUTREACH

PhD Student Panelist , Exploring Careers in STEM Brown University Pre-College Program	2016
Organizer , Communicating Science to Society Symposium Brown University Friedman Family Fund Lecture Series	2016
Session Chair , Symposium on Word Learning, Sleep, and Contexts Annual Meeting for the International Congress for Infant Studies	2016
STEM Workshop Leader , Introduction to Cognitive Neuroscience Girl Scouts of America Senior Leadership Conference	2015 – 2016
Graduate Student Representative Brown University Cognitive, Linguistics, and Psychological Sciences Dept.	2015 – 2016
Colloquium Committee Member The University of Arizona Psychology Department	2012 – 2013