

## Curriculum Vitae

### Personal Information

Name: Mark G. Orr

Affiliation: Florida Institute for Human and Machine Cognition  
40 S. Alcaniz St.  
Pensacola, Florida 32502

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### Education & Training

Degree Type	Discipline	Institution	Year
Fellowship	Epidemiology	Columbia University	2011-14
Certificate	Agent-based Modeling	Argonne National Laboratory	2013
Certificate	System Dynamics	Massachusetts Inst. Of Technology	2009
Certificate	Complex Systems	NIH – Inst. on Systems Science And Health	2009
Postdoctoral	Behavioral Neuroscience	Albert Einstein Coll. Medicine	2004-05
Postdoctoral	Computational Psych.	Carnegie Mellon University	2002-04
Ph.D.	Cognitive Psychology	University of Illinois at Chicago	2003
M.A.	Cognitive Psychology	University of Illinois at Chicago	1999
B.A.	Psychology, Cum Laude	West Chester University	1994

### Research Experience

2024 - Present -- Research Professor, Univ. West Florida, Dept. Intelligent Sys. and Robotics

2024 - Present -- Senior Research Scientist, Florida Institute for Human and Machine Cognition

2018 - 2024 -- Research Associate Professor, Univ. of Virginia, Biocomplexity Institute

2016 - 2018 -- Forum Fellow, Global Forum for Urban and Regional Resilience, Virginia Tech

2014 - 2018 -- Research Associate Professor, Virginia Tech, Biocomplexity Institute

2011 - 2014 -- Epidemiology Merit Fellow, Columbia University, Dept. of Epidemiology

2011 - 2014 -- Associate Research Scientist, Columbia University, Dept. of Epidemiology

2008 - 2011 -- Associate Research Scientist, Columbia University, Population & Fam. Health

2008 - 2009 -- Statistical Consultant, Population Council, New York, NY

2006 - 2010 -- Statistical Consultant, Allen Guttmacher Institute, New York, NY

2006 - 2008 -- Senior Analyst, Columbia University, Population & Fam. Health

2005 - 2006 -- Statistical Consultant, New York State Psychiatric Institute, New York, NY

1997 - 2000 -- Research Associate, Annenberg Foundation/Suzuki Music School, Chicago.

1995 - 1996 -- Research Associate, Reading Area Community College, Office of Institutional Research

### Honors & Awards

Feb, 2016 Global Forum Faculty Fellow (Three year), Virginia Tech

July, 2011 Epidemiology Merit Fellow (Three year), Columbia University, Mailman S. Pub. Hlth.

July, 2002 National Research Service Award (Two-year Institutional), National Institutes of Health

May, 2001 Provost's Award for Dissertation Research, University of Illinois at Chicago  
April, 2001 Piorkowski Award in Cognitive Psychology, University of Illinois at Chicago  
May, 2000 Junior Investigator Fellowship from the New York Academy of Sciences

## Research Support

### Active

DARPA (Defense Advanced Research Project Agency) Orr (Co-PI) 10/2025 – 6/2028  
Title: TBD  
Amount: ---  
Role: *Co-PI*

DARPA (Defense Advanced Research Project Agency) Orr (PI) 12/2025 – 12/2026  
Title: *Sociotechnical Cognitive Architecture Leveraged for Explanation (SCALE)*  
Amount: ---  
Role: *PI*

NSF (National Science Foundation) Orr (Co-I) 9/2025 – 9/2026  
Title: *POSE: Phase I: Toward an Open-Source Ecosystem for the Adaptive Control of Thought-Rational (ACT-R) Computational Cognitive Architecture*  
Amount: \$299,000  
Role: *Co-I (Carnegie Mellon University is the primary institution)*

### Completed

DARPA (Defense Advanced Research Project Agency) Orr (PI) 9/2024 – 1/2025  
Title: TBD  
Amount: ---  
Role: *Sub-contract to LM under Program.*

Army Research Institute Orr (Co-I) 2/2020 – 8/2025  
Title: *Developing Predictive Models of U.S. Army Career Pathways through the Integration of Multiple Army Administrative and Survey Data and Other Non-DOD Data Sources*  
Amount: \$3,100,000  
Role: *Co-I for final 1.5 year of contract.*

National Science Foundation Orr (Co-PI) 9/2022 – 3/2024  
Title: *Computational Theory of the Co-evolution of Pandemics, (Mis)information, and Human Mindsets and Behavior*  
Amount: \$999,000  
Role: *Co-PI (Institute for Human and Machine Cognition is the primary institution)*

IARPA (Intelligence Advanced Research Project Activity) Orr (Co-PI) 10/2020 – 10/2021  
Title: *High-fidelity Population-Level Forecasting Models of Human Psychology and Health Behavior in Response to Nonpharmaceutical Interventions and (Dis)Information Campaigns*  
Amount: \$1,000,000

Role: *Co-Principal Investigator*

National Science Foundation Orr (PI) 9/2015 – 10/2021  
Title: *IBSS: Understanding social diffusion dynamics among networked cognitive systems*  
Amount: \$950,000  
Role: *Principal Investigator*

National Science Foundation Orr (Co-PI) 6/2020 – 6/2021  
Title: *RAPID: Improving Computational Epidemiology with Higher Fidelity Models of Human Behavior*  
Amount: \$212,000  
Role: *Co-Principal Investigator*

DARPA (Defense Advanced Research Project Agency) Orr (PI) 10/2017 – 2/2021  
Title: *Homo SocioNeticus: Scaling the cognitive foundations of online social behavior.*  
Amount: \$6,700,000  
Role: *Principle Investigator*

Center for Disease Control Lewis (PI) 10/2019 – 2/2021  
Title: *Smart Targeting and Optimization for Mitigation and Prevention of Influenza*  
Amount: \$450,000  
Role: *Co-Investigator*

DoD-Minerva Initiative Orr (Co-I) 1/2017 – 12/2020  
Title: *The Dynamics of Common Knowledge on Social Networks: An Experimental Approach*  
Amount: \$2,000,000  
Role: *Co-Investigator*

Army Research Institute Keller (PI) 5//2017 – 4/2022  
Title: *The social component of the human dimension: Leveraging existing DoD data towards optimized individual and team performance in the Army*  
Amount: \$3,000,000  
Role: *Co-Investigator*

Army Research Institute Keller (PI) 9/1/15 – 8/31/18  
Title: *Towards an Integrated Data Framework for Understanding the Context of Military Environments*  
Amount: \$1,700,000  
Role: *Co-Investigator*

National Science Foundation Sterett (PI) 9/15 – 8/16  
Title: *Appealing to the Authority of Data: Social Complexity, Fragmented Decision Making, and the Politics of Smart Cities*  
Amount: \$300,000  
Role: *Co-Investigator*

Patient-Centered Outcomes Research Institute                      Mielenz (PI)    03/1/13 – 05/1/15  
Title: *The Person-Centered Wellness Home Across the Life Course*  
Amount: \$420,000  
Role: *Co-Investigator*

National Science Foundation    Gershon (PI)    12/1/12-09/30/14  
Title: *Systems-Level Mass Fatality Preparedness*  
Amount: \$503,000  
Role: *Co-Investigator*

National Institutes of Health    Orr (PI)    1/2011-1/2013  
Title: *Computational Modeling of Individual-Health Behavior*  
Amount: \$330,000  
Role: *Principle Investigator*

UKY PHSSR Center (RWJF PHSSR)    Merrill (PI)    10/1/11 –09/30/12  
Title: *Health Officers Advice Networks*  
Amount: \$215,000  
Role: *Co-Investigator*

Inst. for Social and Economic Resh. in Policy (Columbia Un.)                      Orr (PI) 9/11 – 5/12  
Title: *Developing Complex Systems Approaches to Population Health*  
Amount: \$28,000  
Role: *Principal Investigator*

Inst. for Social and Economic Resh. in Policy (Columbia Un.)                      Orr (PI) 9/09 – 5/10  
Title: *Social Dynamics of Sexual Initiation: A Complex Systems Approach*  
Amount: \$28,000  
Role: *Principal Investigator*

Inst. for Social and Economic Resh. in Policy (Columbia Un.)                      Orr (PI) 7/08 - 1/09  
Title: *Social dynamics of pregnancy and contraceptive risk*  
Amount: \$15,000  
Role: *Principal Investigator*

## **Research Service**

NSF – Ad-hoc Reviewer, Decision, Risk, and Management Sciences program, Nov. 2020.

Army Research Office Panel Member for MURI--Information Exchange Network Dynamics,  
Nov. 2019

Army Research Institute Subject Matter Expert, May 2019, 2-day internal workshop on complex  
systems approaches to organizational behavior.

National Academies of Sciences Reviewer, May 2017, for National Academies of Sciences, Engineering, and Medicine. (2018). Learning from the Science of Cognition and Perception for Decision Making: Proceedings of a Workshop. Washington, DC: The National Academies Press. doi: <https://doi.org/10.17226/25118>.

Army Research Office Panel Member for MURI--Coevolution of neural, cognitive and social networks, Dec. 2017

NIH Ad-hoc Reviewer-Special Emphasis Panel 2017/05 ZRG1 PSE-R (57), March 6<sup>th</sup>, 2017

NIH Ad-hoc Reviewer-Special Emphasis Panel 2017/01 ZRG1 DKUS-P (54) R, Nov. 3<sup>rd</sup>, 2016.

NSF – Review Panel Member, March 31<sup>st</sup>-April 1<sup>st</sup>, 2016

Army Research Office Reviewer for ARO Core Programs, Oct. 2014.

NIH Ad-hoc Reviewer, July 24<sup>th</sup>-25<sup>th</sup>, 2012.

## Publications

### Journal Articles/Proceedings/Book Chapters:

#### Printed or in press or permanent preprint:

Lebiere, C., Thomson, R., Stocco, A., **Orr, M.**, Morrison, D. (2025). An architectural approach to metacognition. In (Eds.) Shakarian, P., Wei, H. Metacognitive Artificial Intelligence. Cambridge U. Press.

**Orr, M.**, Cranford, D., Ford, K., Gluck, K., Hancock, W., Lebiere, C. Pirolli, P., Ritter, F., Stocco, A. (2025). Not Even Wrong: On the Limits of Prediction as Explanation in Cognitive Science. arXiv preprint (cs.AI). <https://arxiv.org/abs/2510.03311>

**Orr, M.** & Teti, E., Bura, A. Mortveit, H. (2025). Theoretical Note: The relation between structure and dynamics in psychological networks of attitudes. arXiv preprint (q-bio.NC). <https://arxiv.org/abs/2509.14418>

**Orr, M.** (2025). On Optimality and Human Prediction of Event Duration in Real-Time, Real-World Contexts. arXiv preprint (cs.HC). <https://arxiv.org/abs/2509.14482>

Teng, C.M., Pirolli, P., Bhatia, A., Carley, K., Dorr, B., Lebiere, C., Mather, B., Mitsopoulos, K., Morrison, D., **Orr, M.** and Strzalkowski, T., 2025. Prediction of US daily mask wearing and social distancing using psychologically valid agents during three waves of COVID-19. *Frontiers in Epidemiology*, 5, p.1532553. <https://doi.org/10.3389/fepid.2025.1532553>

Pirolli, P, Bhatia, A, Carley, K M, Dorr, B J, Lebiere, C, Mather, M, Mitsopoulos, K, Morrison, D, Orr, M, Strzalkowski, T, Teng, C M. (in press). Computational Cognitive Theory of Attitudes, Social Information, and Behavior during Pandemics, In (Eds) Hudson, F D, Close, L

G, Rothenberg, E: The COVID Information Commons - Research Insights from the Coronavirus, Springer Nature

Mitsopoulos K, Baker L, Lebiere C, Pirolli P, **Orr M** and Vardavas R (2025) Cognitively-plausible reinforcement learning in epidemiological agent-based simulations. *Front. Epidemiol.* 5:1563731. doi: 10.3389/fepid.2025.156373

Espinoza, B., Chen, J., **Orr, M.**, Saad-Roy, C. M., Levin, S. A., Marathe, M. (2025). The impact of risk compensation adaptive behavior on the final epidemic size. *Mathematical Biosciences*. No. 109370

**Orr, M.**, Lebiere, C., Pirolli, P., Morrison (2024). A comparison of two memory models of attitude retrieval. *Proceedings of the Cognitive Science Society*.

**Orr, M.**, Lebiere, C., Pirolli, P., Morrison (2024). A comparison of frequency effects in two attitude retrieval models. *International Conference on Cognitive Modeling Proceedings*.

Prasad, P. V., Steele, M. K., Reed, C., Meyers, L. A., Du, Z., Pasco, R., ... **Orr, M.** ... & Biggerstaff, M. (2023). Multimodeling approach to evaluating the efficacy of layering pharmaceutical and nonpharmaceutical interventions for influenza pandemics. *Proceedings of the National Academy of Sciences*, 120(28), e2300590120.

**Orr, M.**, Morteit, H., Lebiere, C., Pirolli, P. (2023). A prospectus for the integration of cognitive architectures and mathematical epidemiology. *Front. Psychol.*, Vol. 14. <https://www.frontiersin.org/articles/10.3389/fpsyg.2023.986289>

Pires, B., Jimenez, J., Molfino, E., Schaefer, K., Goldstein, J., **Orr, M.** (2023). Knowledge Sharing in a Dynamic, Multi-level Organization: An Agent-Based Modeling Approach. *Computational and Mathematical Organization Theory*. February 10. Available from: <https://doi.org/10.1007/s10588-023-09373-8>

Pirolli P, Lebiere C and **Orr M** (2023) A computational cognitive model of behaviors and decisions that modulate pandemic transmission: Expectancy-value, attitudes, self-efficacy, and motivational intensity. *Front. Psychol.* 13:981983. doi: 10.3389/fpsyg.2022.981983

**Orr, M.**, Stocco. A., Lebiere, C. Morrison, D. (2021). Attitudinal polarization on social networks: A cognitive architecture perspective. In Stewart, T. C. (Ed.). *Proceedings of the 19th International Conference on Cognitive Modelling* (pp. tbd). University Park, PA: Applied Cognitive Science Lab, Penn State.

Morgan, J., Lebiere, C., **Orr. M.** (2021). Trusty ally or faithless snake: Modeling the Role of Human Memory and Expectations in Social Exchange. In *Proceedings of the International Conference SBP-BRiMS 2021*, Robert Thomson, Muhammad Hussain, Chris Dancy, and Aryn Pyke (Eds.) July 06-09, 2021, Virtual, Springer.

Pirolli, P. Carley, K. M., Dalton, A., Dorr, B. J., Lebiere, C., Martin, M. K., Mather, B., Mistopoulos, K., **Orr, M.** Strzalkowski, T. (2021). Mining Online Social Media to Drive

- Psychologically Valid Agent Models of Regional Covid-19 Mask Wearing. In Proceedings of the International Conference SBP-BRiMS 2021, Robert Thomson, Muhammad Hussain, Chris Dancy, and Aryn Pyke (Eds.) July 06-09, 2021, Virtual, Springer.
- Pirolli, P., Bhatia, A., Mistopoulos, K., Lebiere, C. **Orr, M.** (2020). Cognitive modeling for computational epidemiology. A COVID-19 Special Track Paper of the 13<sup>th</sup> International Conference SBP-BRiMS 2020, Oct. 18-20, 2020, [http://sbp-brims.org/2020/proceedings/papers/covid/SBP-BRiMS\\_2020\\_paper\\_90.pdf](http://sbp-brims.org/2020/proceedings/papers/covid/SBP-BRiMS_2020_paper_90.pdf).
- Yang, Y. C., Morrison, D., Stocco, A., **Orr, M.**, Lebiere, C. (2020). Expanded set of declarative memory functionalities in PyACTUp, a Python implementation of ACT-UP's accountable modeling. In Stewart, T. C. (Ed.). Proceedings of the 18th International Conference on Cognitive Modelling (pp. 309-310). University Park, PA: Applied Cognitive Science Lab, Penn State.
- Swarup, S. **Orr, M. G.**, Korkmaz, G. Lakkaraju, K. (2020). Humans vs. Bots: Investigating models of behavior in the iterated prisoner's dilemma. Proceedings of the Spring Simulation Conference (SpringSim), Fairfax, VA, USA, May 19-21, 2020.
- Bhattacharya, P., Lebiere, C., Swarup, S., Ekanayake, S., Kuhlman, C., Morrison, D., Wilson, M., **Orr, M. G.** (2019). The Matrix: An Agent-Based Modeling Framework for Data Intensive Simulations. International Conference on Autonomous Agents and MultiAgent Systems 2019. Montreal, Canada.
- Afrasiabi, M., **Orr, M. G.**, Austerweil, J. (2019). Evaluating Theories of Collaborative Cognition Using the Hawkes Process and a Large Naturalistic Data Set. Proceedings of the 41st Annual Conference of the Cognitive Science Society (pp. 69-75). Montreal, QB: Cognitive Science Society.
- Orr, M. G.**, Lebiere, C., Stocco, A., Pirolli, P., Pires, B., Kennedy, W. G. (2019). Multi-Scale Resolution of Neural, Cognitive and Social Systems. Computational and Mathematical Organization Theory, 25, 4–23.
- Orr, M. G.** (2019). Multi-scale resolution of human social systems: A synergistic paradigm for simulating minds and society. In Pfautz, J., Davis, P., O'Mahony, A. (Eds.), Social-Behavioral Modeling for Complex Systems, pp. 697-710. John Wiley & Sons.
- Orr, M. G.**, Lebiere, C., Stocco, A., Pirolli, P., Pires, B., Kennedy, W. G. (2018). Multi-Scale Resolution of Cognitive Architectures: A Paradigm for Simulating Minds and Society. In Proceedings of the International Conference SBP-BRiMS 2018, Halil Bisgin, Ayaz Hyder, Chris Dancy, and Robert Thomson (Eds.) July 10-13, 2018 Washington, DC, Springer.
- Orr, M. G.**, Chen, D. (2017). Computational models of health behavior. In Vallacher, R., Nowak, A., & Read, S. (Eds.), Computational Models in Social Psychology. Psychology Press/Routledge: New York.



- Keller, S., Korkmaz, G., **Orr, M. G.**, Schroeder, A., Shipp, S. (2017). The Evolution of Data Quality: Understanding the Transdisciplinary Origins of Data Quality Concepts and Approaches. Annual Review of Statistics and Its Application.
- Orr, M. G.**, Ziemer, K., Chen, D. (2017). Systems of behavior and population health. In Galea, S. & El-Sayed, A. (Eds.), *Systems Science and Population Health*. Oxford University Press: Oxford, UK.
- Orr, M. G.**, Galea, S., Kaplan, G. K. (2017). Understanding macrosocial policy using complex systems methods: A case study in population health. Policy approaches to In Kaplan, G. K., (Eds), *Growing Inequality: Bridging Complex Systems, Population Health, and Health Disparities*. Westphalia Press: Washington, DC.
- Orr, M. G.**, Galea, S. G., Kaplan, G. A. (2016). Neighborhood Food, Physical Activity, and Educational Environments and Black/White Disparities in Obesity: A Complex Systems Simulation Analysis. Journal of Epidemiology and Community Health, 70, 862-867.
- Merrill J. A., **Orr M. G.**, Chen D. Y., Zhi Q., Gershon, R. R. (2016). Are we ready for mass fatality incidents? Preparedness of the US mass fatality infrastructure. Disaster Medicine & Public Health Preparedness, 10,(1):87-97.
- Todd, C. S., Stanekzai, M. R., Nasir, A., Fiekert, K., **Orr. M. G.**, Strathdee, S. A., Vladhov, D. (2016). Change in attitudes and knowledge of problem drug use and harm reduction among a community cohort in Kabul, Afghanistan. Eastern Mediterranean Health Journal, 22(3), 107-116.
- Orr, M. G.**, Ziemer, K., Lewis, B., Keller, S. (2015). Mathematical and Computational Simulation of Behavioral and Social Drivers of Population Health. In Spittle, M. & Kaplan, R. (Eds.), *Emerging behavioral and social science perspectives on population health*: AHRQ Press.
- Minguez, M., Santelli, J., Gibson, E., **Orr, M. G.**, Shamat, S. (2015). Reproductive health impact of a school health center. Journal of Adolescent Health, 56, 338-344.
- Gershon R. R., **Orr M. G.**, Zhi Q., Merrill J. A., Chen D. Y., Riley H. E., Sherman M. F. (2014). Mass fatality preparedness among medical examiners/coroners in the United States: a cross-sectional study. BMC Public Health. 14(1):1275. [Epub ahead of print]
- Orr, M. G.**, Galea, S., Riddle, M., Kaplan, G. A. (2014). Reducing Racial Disparities in Obesity: Simulating the Effects of Improved Education and Social Network Influence on Diet Behavior. Annals of Epidemiology, 24, 563-69.
- Orr, M. G.**, Prescott, M. R., Cohen, G. H., Calabrese, J. R., Tamburrino, M. B., Liberzon, I., Galea, S. (2014). Potentially modifiable deployment characteristics and new-onset alcohol abuse or dependence in the US National Guard. Drug and Alcohol Dependence, 142, 325-332



- Orr, M. G., & Plaut, D. C.** (2014). Complex systems and health behavior change: Insights from cognitive science. American Journal of Health Behavior, 38(3), 404-413.
- Orr, M. G., & Merrill, J. A.** (2013). Diffusion of innovation across a national local health department network: A simulation approach to policy development using agent-based modeling, Frontiers in Public Health Services and Systems Research, 2(5), Article #3: <http://uknowledge.uky.edu/frontiersinphssr/vol2/iss5/3>
- Orr, M. G., Thrush, R., & Plaut, D. C.** (2013). The Theory of Reasoned Action as parallel constraint satisfaction: Towards a dynamic computational model of health behavior. PLOS: One, 8(5): e62490. doi:10.1371/journal.pone.0062490
- Santelli, J., Edelstein, Z., Mathur, S., Wei, Y., Zhang, W., **Orr, M. G.**, Higgins, J., Nalugoda, F., Gray, R., Wawer, M., Serwadda, D., (2013) Behavioral, biological, and demographic risk and protective factors for new HIV infections among youth in Rakai, Uganda. Journal of Acquired Immune Deficiency Syndromes, 63(3), 393-400
- Merrill, J.A., **Orr, M.G.**, , Jeon, C.Y., Wilson, R. V., Storrick, J., Carley, K.M. (2012). Topology of local health officials' advice networks: Mind the gaps. Journal of Public Health Management and Practice, 18(6): 602-608
- Merrill, J. A., Carley, K. M., **Orr, M. G.**, Jeon, C. Y., Storrick, J. (2012). Patterns of interaction among local public health officials and the adoption of recommended practices. Frontiers in Public Health Services and Systems Research, 1(1), Article 6.
- Stanekzai, M.R., Todd, C. S., **Orr, M. G.**, Bayan, S., Rasuli, M. Z., Wardak, S. R., Strathdee, S. A. (2012). Baseline assessment of community knowledge and attitudes towards drug use and harm reduction in Kabul, Afghanistan, Drug and Alcohol Review, 31(4), 451-60
- Orr, M. G. & Evans, C.** (2011). Understanding long-term diffusion dynamics in the prevalence of adolescent sexual initiation: A first investigation using agent-based modeling. Research In Human Development, 8(1), 48-66.
- Lindberg, L. & **Orr, M. G.** (2010). Neighborhood-level influences on young men's sexual and reproductive health behaviors. American Journal of Public Health, 101(2), 271-274.
- Waddell, E., **Orr, M.G.**, Sackoff, J.S., Santelli, J.S. (2010). Pregnancy risk among black, white, and Hispanic teen girls in New York City public schools. Journal of Urban Health, 87(3), 426-439.
- Santelli, J.A., **Orr, M.G.**, and Lindberg, L., Diaz, D.C. (2009). Changing Behavioral Risk for Pregnancy among High School Students in the United States, 1991-2007, Journal of Adolescent Health, 45(1), 25-32.

- Santelli, J.A., Sandfort, T.G., **Orr, M. G.** (2009). U.S./European differences in condom use. Letters to the editor. Journal of Adolescent Health, 44(3), 306
- Santelli, J. A., Lindberg, L., **Orr, M. G.** , Finer, L. B. , Speizer, I., (2009). Exploring key dimensions of pregnancy intentions. Studies in Family Planning, 40(2), 87-100
- Santelli, J.A, Carter, M., **Orr, M. G.**, Dittus, P. (2009). Trends in sexual risk behaviors, by non-sexual risk behavior involvement, U.S. high school students, 1991-2007. Journal of Adolescent Health, 44(4), 372-379.
- Santelli, J. A., Sandfort, T, **Orr, M. G.** (2008). Transnational comparisons of adolescent contraceptive use: What can we learn from these? Archives of Pediatrics & Adolescent Medicine, 2008 Jan;162(1):92-94.
- Sandfort, T, **Orr, M. G.**, Santelli, J.A., Hirsh, J.H. (2008). Long-term health consequences of timing of sexual initiation: Results from a national U.S. study, American Journal of Public Health, Jan;98(1):155-61.
- Sussman, E., Horváth, J., Winkler, I. and **Orr, M. G.** (2007). The role of attention in the formation of auditory streams. Perception & Psychophysics, 69, (1), 136-152.
- Orr, M. G.** & Ohlsson, S. (2005). Relationship between complexity and liking as a function of expertise. Music Perception, 22, (4), 583-610.
- Orr, M. G.** & Ohlsson, S. (2001). The relationship between musical complexity and liking in jazz and bluegrass. Psychology of Music, 29, (2), 108-127.
- Renner, M. J., Feiner, A. J., **Orr, M. G.**, & Delaney, B. A. (2000). Environmental enrichment for new world primates: Introducing food-irrelevant objects and \*direct and secondary effects. Journal of Applied Animal Welfare Science, 3, (1), 23-32.
- Orr, M. G.** & Ohlsson, S. (1999). Effects of music expertise on evaluative judgments. In M. Hahn and S. C. Stoness (Eds.), Proceedings of the 21st Annual Conference of the Cognitive Science Society (p. 809). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.
- Matzelle, R., Rosenberg, B. & **Orr, M. G.** (1996). A study of the term and semester calendars in a two year community college. Reading, PA: Reading Area Community College. (ERIC Document Reproduction Service No. ED 389355)

### **Miscellaneous Publications**

- Orr, M. G.** (2016). Computational modeling of attitudes & 4th Workshop on Sentiment Analysis where AI meets Psychology--SAAIP 2016. In, Reports on the 2016 IJCAI Workshop Series, Srivastava, B. & Sukthankar, G. (Eds.). AI Magazine.

### **Presentations (\* denotes invited presentation)**

- \*Orr, M. G., and the Intergenerational Centaur Response Group (Drew Cranford, Ken Ford, Kevin Gluck, Will Hancock, Christian Lebiere, Pete Pirolli, Andrea Stocco, Frank Ritter). (July, 2025). Machine Learning Models of the Statistics of Human Behavioral Responses in Experimental Tasks. Presented at the 2025 ACT-R Summer Workshop. University of Ohio, Columbus, Oh.
- Pirolli, P., Lebiere, C., **Orr, M. G.** (Dec, 2020). Improving computational epidemiology with higher fidelity models of human behavior. Presented at the NSF PREPARE workshop virtually at the Univ. of Virginia Biocomplexity Institute.
- \***Orr, M. G.**, (Feb., 6-7, 2020). Panel Discussion: Strategies & Tactics: Political Warfare & Influence. Workshop on Future of Political Warfare: Intelligence Community Studies Board. Division on Engineering and Physical Sciences, National Academy of Sciences.
- Orr, M. G.** (Dec. 2019). *Computational Social Psychology and the Modeling of Health Behavior*. Presentation to Center for Disease Control, Atlanta, GA.
- Orr, M. G.** Bhattacharya, P., Lebiere, C. (June, 2019). *Wither Cognitive? Population Health Simulation and Its Discontents*. Presentation to the ACT-R Workshop 2019 at the ICCM 2019 Conf. Montreal, CA.
- \***Orr, M. G.** (Oct. 2019). Scale-Agnostic Social Science: From Neural and Cognitive First Principles to Social Phenomena and Back. Presentation to Sociology Department Seminar, Duke University.
- Lebiere, C. **Orr, M. G.**, Bhattacharya, P. (2019). Large-Scale Cognitive Simulations of Disinformation. Panel on Disinformation at the SPB-BRIMS, 2019, Washington, DC.
- Glasgow, T.E., Acton, B., **Orr, M.**, & Foti, R. (2019, April). *Agent-Based Modeling: Current and Future Directions in Organizational Psychology*. Poster for presentation at the 34<sup>th</sup> Annual Society for Industrial and Organizational Psychology, National Harbor, MD.
- Orr, M. G.**, Lebiere, C., Stocco, A., Pirolli, P., Pires, B., Kennedy, W. G. (Oct. 2018). Multi-Scale Resolution of Cognitive Architectures: A Paradigm for Simulating Minds and Society. Paper presented at the American Association for Artificial Intelligence Fall Symposium.
- \***Orr, M. G.** (2018, Apr. 17<sup>th</sup>). Panel presentation on Miscellaneous Topics. Invited panel presentation for “Physics of Information Processing” at the 3<sup>rd</sup> International Workshop on Social Sensing, Orlando, Florida.
- \***Orr, M. G.**, (2016, Aug. 4<sup>th</sup>). Exploring to-scale Cultural Dynamics: Beyond Machine Learning to Human Physical Symbol Systems. Invited panel presentation at the American Psychological Association Convention 2016. Denver, CO.
- \***Orr, M. G.** (2015, October). Using the Networked Cognitive Systems Approach to Understand Human Information Diffusion. Invited presentation to the Urban Institute modeling group.

- \*Orr, M. G.** (2015, April). Using the Networked Cognitive Systems Approach to Understand Human Information Diffusion. Invited presentation to the George Mason Computational Social Science Laboratory.
- \*Gershon, R. M., Merrill, J., Orr, M. G., Zhi, Q., Sherman, M.** (2014, April). Mass Fatalities and the Death Care Sector. Invited keynote for the British Columbia Funeral Association. Vancouver, BC, Canada.
- \*Orr, M. G.** (2013, July). Modeling Health Behavior Dynamics: Individuals, Populations, Place and the In-Between. Invited speaker for the 4<sup>th</sup> Annual Workshop on Dynamic Modeling for Health Policy: Cross-leveraging Dynamic Modeling and Digital Epidemiology. University of Saskatchewan, Saskatoon, CA.
- \*Orr, M. G.** (2013, April). Social Networks and Population Health. Invited speaker for the Advanced Seminar on Modeling for Public Health and Clinical Research, Columbia University Mailman School of Public Health, New York, NY.
- \*Orr, M. G.** (2013, Feb.) Modeling Health Behavior Policy: Motivation, An Example & The Future. Invited speaker to the Complex Systems Approaches to Health student group at the Columbia University Mailman School of Public Health, New York, NY.
- Galea, S., **Orr, M.G.**, Osgood, N., Mintz, R., Riddle, M., Kaplan, G.A. (Dec. 2012). Competing policy priorities in a resource constrained world: Identifying the most effective policy interventions to reduce black/white disparities in obesity. Presentation at the Science of eliminating health disparities: Building a healthier society, National Harbor, MD.
- \*Orr, M. G. (2012, June).** Nearly decomposable systems, causal inference, and validation: Using computational models of people and populations in epidemiology. Invited panel speaker for a symposium on “The use of a complex systems approach in epidemiological research: If and when it’s worth it.” At the Annual Meeting of the Society for Epidemiological Research, Minneapolis, Minnesota.
- \*Orr, M. G.** (2012, May). Agent Simulations in Health Behavior. Invited panel speaker for a symposium on “Systems perspectives in health” sponsored by the Complex Systems Approaches to Health student group at the Columbia University Mailman School of Public Health, New York, NY.
- \*Orr, M. G.** (2012, April). Understanding obesity: A complex systems/ecological approach. Invited speaker for “Public Health Week” at the Montclair State University, Montclair, NJ.
- \*Orr, M. G. & Kosenko, A.** (2012, February). Understanding obesity: A complex systems/ecological approach. Invited lecture to the Quantitative Methods in Social Sciences seminar at the Institute for Social and Economic Research in Policy, Columbia University, New York, NY.

- \*Orr, M. G.** (2012, February). (Reverse)Engineering health behavior. Invited workshop lecture for synergy between engineering and public health, Columbia University School of Engineering, New York, NY.
- \*Orr, M. G.** (2012, January). The social dynamics of health behavior: A neural network account of the theory of reasoned action. Invited pre-conference Workshop Lecture for the Annual Meeting of the Society for Personality and Social Psychology, San Diego, CA.
- Orr, M. G.** (2009, October). Long-term dynamics of social norms. Annual meeting of the Society for the Study of Human Development, Ann Arbor, MI
- \*Santelli, J.S., Lindberg, L., Orr, M.G., Jones, R., Speizer, I., Finer, L.B.** (2008, March). Exploring key dimensions of pregnancy intentions among youth. Annual Meeting of the Society for Adolescent Medicine (SAM), Greensboro, NC.
- Santelli, J.S., Orr, M.G., Lin, A.J.** (2007, Nov.). Trends in sexual behaviors and contraceptive use in US high school students: 1991-2005: Are positive trends faltering? American Public Health Ass. Meeting, Wash. D.C
- Santelli, J.S., Carter, M., Dittus, P, Orr, M.G.** (2007, Nov). Co-variation in sexual and nonsexual risk behaviors over time among U.S. high school students 1991-2005. American Public Health Ass. Meeting, Wash. D.C.
- Santelli, J.S., Lindberg, L., Orr, M.G., Jones, R., Speizer, I.S., Finer, L.B.** (2007, Nov.). Exploring key dimensions of pregnancy intentions. American Public Health Ass. Meeting, Wash. D.C.
- Orr, M. G.** (2000, August). Incidental learning and skilled memory theory. Poster accepted for presentation at International Conference for Music Perception and Cognition, Keele, UK.
- Orr, M. G.** (2000, May). Perceived complexity of music: chunking vs. perceptual learning. Poster presentation at the Biological Foundations of Music Conference (A New York Academy of Sciences Conference), New York, New York.
- Orr, M. G.** (2000, April). Perceived complexity of music: chunking vs. perceptual learning. Paper accepted for presentation at the Midwestern Psychological Association's Annual Conference, Chicago, IL.
- Orr, M. G., Ohlsson, S, & Miller, L. K.** (1999, August). The inverted-U theory: Does it explain expert behavior? Paper presented at the Society for Music Perception and Cognition's Conference 1999, Evanston, IL.
- Orr, M. G. & Ohlsson, S.** (1999, June). Recognition memory for melodies: Implicit learning, expertise, and musical structure. Poster presented at the annual meeting of the American Psychological Society, Denver, CO.

**Orr, M. G.,** Ohlsson, S., & Miller, L. K. (1999, April). The interaction between expertise, complexity and liking in music. Paper presented at the Midwestern Psychological Association's Annual Conference, Chicago, IL.

**Orr, M. G. &** Ohlsson, S. (1999, March). Recognition memory for melodies: Implicit learning, expertise, and musical structure. Paper presented at the Sigma Xi Graduate Student Research Forum, University of Illinois at Chicago, Chicago, IL.

**Orr, M. G. &** Miller, L. K. (1997, August). Aesthetic response to music: Genre and training effects. Paper presented at the Society for Music Perception and Cognition Annual Conference 1997, Cambridge, MA.

Renner, M. J., Feiner, A. J., Delaney, B. A., & **Orr, M. G.,** (1994, June). Monkeys in toyland: Human infant toys as environmental enrichment for zoo primates. Poster session presented at the annual meeting of the American Psychological Society, Washington, DC.

Renner, M. J., Feiner, A. J., Delaney, B. A., & **Orr, M. G.,** (1994, June). Monkeys in toyland: Human infant toys as environmental enrichment for zoo primates. Poster session presented at the annual meeting of the Animal Behavior Society, Seattle, WA.

## **Media**

**Orr, M. G., 4-17-17,** Radio Interview with TBS eFM's "This Morning" English radio program in Seoul, Korea.

**Orr, M. G.,** Dec. 2020, Interview for Knowable Magazine from Annual Reviews, <https://knowablemagazine.org/article/technology/2020/virtual-agents-change-how-computers-are-mapping-covid19s-future>.

## **University Service**

### **Committees:**

*Outreach Committee, Biocomplexity Institute, University of Virginia*  
Chair, Stephen Eubank  
10-18 to present.

*Organizing Committee for the Biocomplexity Symposium 2016*  
Chair, Laurie Coble  
1-16 to 6-16

*Committee on Strategic Growth Area of Policy, Virginia Tech*  
Chairs, Karen Roberto, Anne Kademian  
7-16 to 10-18

*Committee on Adaptive Brain and Behavior Destination Area, Virginia Tech*  
Chair, Elizabeth Tranter  
7-16 to 10-18

*Organizing Committee for the Workshop on Risk, Fear and Resilience at Virginia Tech*

Chair, James Bohland  
9-15 to 10-16

*Committee on Development of Simulations for Public Health Education, Columbia University*  
Chairs, Sandro Galea & Melissa Begg  
2-1-12 to 5-1-14

*NIH/CDC Institute for Systems Science and Health 2010, Columbia University*  
Chair, Patricia Mabry (NIH-OBSSR)  
10-1-10 to 7-1-10

*Future of Public Health Working Group, Columbia University*  
Chair, Linda Fried  
9-1-09 to 9-1-11

*Implementation and Systems Science in Population and Family Health, Columbia University*  
Chair, Joanne Csete  
8-1-09 to 6-1-10

## **External Committee Service**

*Program committee for the 7th International Workshop on Social Sensing (SocialSens 2022), Spring 2022.*

*Program committee for the National Science Foundation-Prepare workshop on Social, Behavioral, Economic and Governance (SBEG) aspects of pandemic research, May-June 2021.*

*Program committee for the First International Workshop on Social Threats in Online Conversations: Understanding and Management (STOC 2020).*  
3-20 to 6-20

*Program committee for the 5th International Workshop on Social Sensing (SocialSens 2020).*  
4-20 to 7-20.

*Program committee for the 3<sup>rd</sup> International Conference on Complexity-Based Analytics and Policies for the Social Good (CAPS2019)*  
4-18 to 4-19

*Program committee for the 16<sup>th</sup> International Joint Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2017).*  
9-16 to 5-17

*Program committee for the 5<sup>th</sup> Workshop on Sentiment Analysis: Where AI Meets Psychology*  
8-16 to 5-17

*Program committee for International Conference on Complexity-Based Analytics and Policies for Social Good (CAPS2017).*  
6-16 to 3-17

*Website committee for Interdisciplinary Association for Population Health Science*



1-16 to 1-17

*Communications committee for Interdisciplinary Association for Population Health Science*  
1-16 to 1-17

*Organizing Committee for the 9th International Conference on Agents and Artificial Intelligence*  
4-16 to 2-17

*Organizing Committee for the computational modeling of attitudes workshop at the 2016 International Joint Conference for Artificial Intelligence.*  
9-15 to 7-16

## Peer-Review Service

### Review Board

American Journal of Health Behavior

### Ad Hoc

Psychological Science

American Journal of Public Health

Journal of Adolescent Health

Studies in Family Planning

American Journal of Preventive Medicine

Obesity

Futures

Social Science and Medicine: Population Health

International Journal of Behavioral Nutrition and Physical Activity

Computational and Mathematical Organization Theory

Developmental Review

Scientific Reports

## Society Membership

Cognitive Science Society

Society for Personality and Social Psychology

Society for Epidemiological Research

## Teaching Experience

### Mentorship

**Subject** (*Undergraduate (U), Graduate (G),  
Postdoctoral (P)*)

**Institution**

**Date**

Experimental Psychology (U)

University of Illinois at Chicago

1998-2002

Computational Modeling of Social Processes (G)  
(*Advisor to Nathan Lane*)

Columbia University

Fall-Sp 2009-10

Practicum in Computational Modeling of Social Process (G)

<i>(Advisor to Clare Evans)</i>	Columbia University	Summer 2010
Computational Modeling of Social Processes (G) <i>(Primary Thesis Advisor to Clare Evans)</i>	Columbia University	Fall-Sp 2010-11
Computational Modeling of Social Processes (G) <i>(Advisor to Andrew Kosenko)</i>	Columbia University	Fall-Sp 2011-12
Computational Modeling of Health Behavior (P) <i>(Advisor to Roxanne Thrush)</i>	Columbia University	Sp 2011-Sp 2013
Computational Modeling of Social Processes (G) <i>(Primary Thesis Advisor to Daniel Chen)</i>	Columbia University	Fall-Sp 2013-14
Computational Modeling of Social Processes (G) <i>(Primary Thesis Advisor to Janet Hui)</i>	Columbia University	Fall-Sp 2013-14
Practicum in Computational Modeling of Social Processes (G) <i>(Advisor to Elizabeth Lupp)</i>	Columbia University	Fall-Sp 2013-14
Data Science and Psychology (P) <i>(Advisor to Kathryn Ziemer)</i>	Virginia Tech	Fall 2014 – 2016
Computational Modeling of Social Processes (G) <i>(Doctoral Candidate Advisor to Daniel Chen)</i>	Virginia Tech	Sp 2015 – 2018.
Computational Modeling of Social Processes (P) <i>(Advisor to Parantapa Bhattacharya)</i>	Univ. of Virginia	Sp. 2018 – 2021.
Computational Modeling of Social Processes (P) <i>(Advisor to Fanchao Meng)</i>	Univ. of Virginia	Sp. 2019 – 2021.
Computational Modeling of Social Processes (G) <i>(Doctoral Candidate Advisor to Daniel Chen)</i>	Univ. West Florida	Fall 2024 – Sp 2025

Course Instructor

<b>Subject</b> <i>(Undergraduate (U) or Graduate (G))</i>	<b>Institution</b>	<b>Date</b>
Statistics in the Behavioral Sciences (U)	University of Illinois at Chicago	Spring 2000
Quantitative Methods Tutorial (workshop) (G)	Columbia University	Spring 2007-08
Advanced Stat Methods Using Stata (workshop) (G)	Guttmacher Institute	Winter 2007
Complex Systems Approach to Health Behavior (workshop) (G)	Columbia University	Spring 2010
Health and Human Sexuality (U)	Penn State-Berks	Fall 2010
Introduction to Cognitive Psychology (U)	Penn State-Berks	Spring 2011
Introduction to Agent-Based Modeling for Social and Political Process (G)	Virginia Tech	Spring 2016

Thesis/Dissertation Committees

Henry Smart, School of Political and International Affairs, Virginia Tech  
Dan Chen, Biocomplexity Institute, Virginia Tech  
Daniel Pfister, University of West Florida

## **Curriculum Development**

*Development of Simulations for Public Health Education, Columbia University*  
*2-1-12 to 6-1-2014*