

XIAO YANG, PH.D.
xiao1.yang@northeastern.edu

PROFESSIONAL APPOINTMENTS

Northeastern University 2023 - Present	Assistant Professor
Mindstrong Health 2021 - 2023	Research Lead, Senior Data Scientist
Stanford University (Dept. of Psychology) 2020 - 2021	Postdoctoral Research Fellow
Beijing Academy of Educational Sciences 2011 - 2015	Research Analyst
Bayview Asset Management, LLC, Miami, FL 2009 - 2011	Quantitative Analyst

EDUCATION

The Pennsylvania State University, University Park, PA

Ph.D. Human Development and Family Studies

Aug 2020

Dissertation Title: Use Boolean network method to model and control within-person and between-person dynamics

Advisor: Nilam Ram, Ph.D.

Columbia University, New York, NY

M.A. in Statistics

2009

Tsinghua University (China)

M.S. in Computer Science

2007

B.S. in Automation

2004

FELLOWSHIPS

\$108,000 (USD) National Institute of Health (NIH) T32 Trainee

2018-2020

Psychosocial Determinants and Biological Pathway to Healthy Aging

award #AG049676

\$54,000 (USD)

National Science Foundation (NSF) Student Scholar

2016-2017

Center for Health Organization Transformation (CHOT)
I/UCRC award #1624727

AWARDS

\$4,000 (USD)

Hintz Dissertation Award

2019-2020

\$1,500 (USD) SMEP (Society of Multivariate Experimental Psychology) Travel Award 2019

\$18,495 (USD) Graham Endowed Fellowship, Pennsylvania State University 2015

RESEARCH EXPERIENCE

Digital Phenotyping for Mental Health

2021 – Present

Mindstrong Health

The Human Screenome Project (Screenomics)
2017 – 2021

Pennsylvania State University & Stanford University

Mentors: Drs. Nilam Ram, Byron Reeves & Thomas Robinson

Network Control of Psychological Networks and Social Networks

2019 – 2020

Pennsylvania State University

Mentors: Drs. Nilam Ram, Peter C.M. Molenaar & Reka Albert

Network Modeling of Person-Specific Psychological Networks

2016 – 2020

Pennsylvania State University

Mentors: Drs. Nilam Ram, Peter C.M. Molenaar & Scott Gest

Modeling Temporal-Spatial Diffusion of Behavior Using Twitter Data

2019 – 2020

Pennsylvania State University

Mentors: Drs. Nilam Ram & S. Shyam Sundar

Modeling Growth of Attentional Bias

2016 – 2017

Pennsylvania State University

Mentors: Drs. Nilam Ram, Kristin Buss & Koraly Perez-Edgar

Modeling Children's Cost Estimation

2016 – 2017

Pennsylvania State University

Mentors: Drs. Nilam Ram & Lisa Gatzke-Kopp

Modeling Social Cognitive Process of Borderline Personality Disorder Patients

2008 – 2015

Columbia University

Mentors: Drs. Geraldine Downey, Kathy Berenson & Karin Coifman

PUBLICATIONS

Manuscripts Submitted

1. **Yang, X.**, Ram, N., Albert, R., & Molloy-Elreda, L. Modeling and managing behavior change in groups: A Boolean network method.
2. Liu, P., **Yang, X.**, Tan, J.X.Y. Trial-level ERPs predicted behavioral responses in a Self-Referent Encoding Task in late childhood.

Manuscripts Accepted

3. **Yang, X.**, Knights, J., Bangieva, V., & Kambhampati, V. (2023). Association between severity of depressive symptoms and human-smartphone interaction behavior: A longitudinal study. *JMIR Formative Research*. <https://formative.jmir.org/2023/1/e42935>
4. **Yang, X.**, Ram, N., Molenaar, P.C.M., Cole, P.M. (2021). Describing and controlling multivariate nonlinear dynamics: A Boolean network method. *Multivariate Behavioral Research*. <https://doi.org/10.1080/00273171.2021.1911772>
5. Brinberg, M., Ram, N., **Yang, X.**, Cho, M.J., Reeves, B., & Robinson, T (2021). The idiosyncrasies of everyday digital lives: Using the Human Screenome Project to study user behavior on smartphones. *Computers in Human Behavior*. <https://doi.org/10.1016/j.chb.2020.106570>
6. **Yang, X.**, Ram, N., Loughheed, J. P., Molenaar, P. C. M., & Hollenstein, T. (2019). Adolescents' emotion system dynamics: Network-based analysis of physiological and emotional experience. *Developmental Psychology*, 55(9), 1982-1993. <https://doi.org/10.1037/dev0000690>
7. Ram, N., **Yang, X.**, Cho, M.J., Brinberg, M., Muirhead, F., Reeves, B., & Robinson, T. (2019). Screenomics: A new approach for observing and studying individuals' digital lives. *Journal of Adolescent Research*, 1-35, <https://doi.org/10.1177/0743558419883362>
8. Reeves, B., Ram, N., Robinson, T., Cummings, J., Giles, L., Pan, J., Chiatti, Cho, M., Roehrick, K., **Yang, X.**, Gagneja, A., Brinberg, M., Muise, D., Lu, Y., Fitzgerald, A., & Yeykelis, L (2019). *Screenomics: a framework to capture and analyze personal life experiences and the ways that technology shapes them*. *Human-Computer Interaction*. <https://doi.org/10.1080/07370024.2019.1578652>
9. **Yang, X.**, Ram, N., Robinson, T., & Reeves, B. (2019). Using screenshots to predict task switching on smartphones. *ACM Conference on Human Factors in Computing Systems (CHI '19 Late Breaking Work)*. Glasgow, UK. May 2019. <https://doi.org/10.1145/3290607.3313089>
10. **Yang, X.**, Ram, N., Gest, S., Lydon, D., Conroy, D. E., Pincus, A. L., & Molenaar, P. C. M. (2018). Socioemotional dynamics of emotion regulation and depressive symptoms: A person-specific network approach. *Complexity*, 2018, Article ID 5094179. <https://doi.org/10.1155/2018/5094179>
11. Ram, N., & **Yang, X.** (2018). Growth modeling using the differential form: Translations from study of fish growth. In E. Ferrer, S. M. Boker, & K. Grimm (Eds.), *Longitudinal Multivariate Psychology* (pp. 277-300). New York: Routledge. <https://doi.org/10.4324/9781315160542-14>
12. Chiatti, A., Cho, M. J., Gagneja, A., **Yang, X.**, Brinberg, M., Roehrick, K., Choudhury, S. R., Ram, N., Reeves, B., & Giles, C. L. (2018). Text extraction and retrieval from smartphone screenshots: Building a repository for life in media. *SAC '18 Proceedings of the 33rd Annual ACM Symposium on Applied Computing*, 948-955. <https://doi.org/10.1145/3167132.3167236>

13. Berenson, K.R., Dochat, C., Martin, C.G., **Yang, X.**, Rafaeli, E., Downey, G. (2018). Identification of mental states and interpersonal functioning in borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment*, 9(2), 172-181. <https://doi.org/10.1037/per0000228>
14. Chiatti, A., **Yang, X.**, Brinberg, M., Cho, M. J., Gagneja, A., Ram, N., Reeves, B. & Giles, C. L (2017). Text extraction from smartphone screenshots to archive in situ media behavior. *K-CAP 2017*. Austin, USA. <https://doi.org/10.1145/3148011.3154468>
15. Berenson, K.R., Gregory, W.E., Glaser, E., Romirowsky, A., **Yang, X.**, Downey, G. (2016). Impulsivity, rejection sensitivity, and reactions to stressors in borderline personality disorder. *Cognitive Therapy and Research*, 40(4), 510-521. <https://doi.org/10.1007/s10608-015-9752-y>

CONFERENCES (first author is presenting author)

2022

Yang, X., Knights, J., Klein, A., Bangieva, V., DuBois, H., & Baker, J. Relationship between digital behavior and depressive symptoms. *Association of Psychological Science, Chicago*.

2021

Yang, X. Describing and controlling multivariate nonlinear dynamics: A Boolean network approach. *International Meeting of Psychometrics Society, virtual*.

2020

M.J.Cho, **Yang, X.**, Brinberg, M., Ram, N., Robinson, T., & Reeves, B. Digital traces and online communities - media production behavior on smartphones: Content, structure, context, and time. *International Communication Association, virtual*.

2019

Yang, X., & Ram, N. Controlling socioemotional dynamics in daily life: A Boolean network approach. *Gerontological Society of America*. Austin, TX.

Yang, X. Modeling and controlling multivariate dynamical system: A Boolean network approach. *Society of Multivariate Experimental Psychology (SMEP)*. Baltimore, MD.

Yang, X., Ram, N., Robinson, T., & Reeves, B. Using screenshots to predict task switching on smartphones. *ACM Conference on Human Factors in Computing Systems*. Glasgow, UK.

Yang, X., Ram, N., Loughed, J. P., Molenaar, P. C. M., & Hollenstein, T. Adolescents' emotion system dynamics: Network-based analysis of physiological and emotional experience. *Society for Research in Child Development*, Baltimore, MD.

Ram, N., **Yang, X.**, Gatzke-Kopp, L. Developmental Change in Psychophysiological Systems: Lessons from Computational Biology. *Society for Research in Child Development*, Baltimore, MD.

2018

- Yang, X.**, Ram, N., Gest, S., Lydon, D., Conroy, D. E., Pincus, A. L., & Molenaar, P. C. M. Socioemotional dynamics of emotion regulation and depressive symptoms: A person-specific network approach. *The Gerontological Society of America*, Boston, MA.
- Yang, X.**, Ram, N., & Molenaar, P. C. M. Pom-pom: Person-oriented method and perturbation on the model. *International Meeting of the Psychometric Society*, Columbia University, New York, NY.
- Yang, X.**, Chiatti, A., & Ram, N. The switch of digital-mediated behavior: From screenshots to switches. *Association for Psychological Science*, San Francisco, CA.

2017

- White, R., **Yang, X.**, Ram, N., & Gatzke-Kopp, L. Skin conductance reactivity moderates the association between deliberation time and willingness to take risk in a probabilistic decision-making task. *Society for Psychophysiological Research Meeting*, Vienna, Austria.
- Yang, X.**, Ram, N., & Reeves, B. Image classification of screenshot. *Mini Conference of Life in Media*, Stanford University, Palo Alto, CA.
- Yang, X.**, Lydon, D., Ram, N., Gest, S., & Molenaar, P. C. M. Individuals as dynamic networks: a merging of intraindividual variability, network analysis, and experience sampling. *Modern Modeling Method*, University of Connecticut, Storrs, CT.
- Yang, X.**, Lydon, D., Ram, N., Gest, S., & Molenaar, P. C. M. Examining emotional dynamics using experience sampling data and network models. *Virginia and Pennsylvania State Exchange (VAPE)*, University of Virginia, Charlottesville, VA.
- Yang, X.**, Risley, S., Buss, K., Perez-Edgar, K., Destafney, C., Parry, L., & Ram, N. No Relation between Attention Bias and Behavioral Inhibition: Findings from 6 studies using 6 metrics of Attention Bias. *Society of Research in Child Development*, Austin, Texas.

2016

- Yang, X.**, Lydon, D., Ram, N., Gest, S., & Molenaar, P. C. M. Translating intraindividual variability methods into network analysis. *Modern Modeling Method*, University of Connecticut, Storrs, CT.

INVITED TALKS & SEMINARS

2020

- Yang, X.** Modeling Within-Person Regulation Processes Using Networks and Screenomics. *Pennsylvania State University Psychology Colloquium Series*, State College, PA (virtual zoom meeting).
- Yang, X.** Modeling Within-Person Regulation Processes Using Networks and Machine Learning. *University of Virginia Psychology Department Colloquium Series*, Charlottesville, VA.

- Yang, X.** Modeling and managing peer influence dynamics: A Boolean network method. *PSU-UMD Methodology Exchange*, College Park, MD.
- Yang, X.** Modeling Within-Person Regulation Processes Using Networks and Artificial Intelligence. *University of Oklahoma Psychology Department Colloquium Series*, Norman, OK.
- Yang, X.** Boolean network method applied to developmental questions. *Colloquium of NIH T32: Psychosocial Determinants and Biological Pathway to Healthy Aging*. Pennsylvania State University, University Park, PA.

2019

- Yang, X.,** Ram, N., Loughheed, J. P., Molenaar, P. C. M., & Hollenstein, T. Adolescents' emotion system dynamics: Network-based analysis of physiological and emotional experience. *PSU-UMD Methodology Exchange*, University Park, PA.
- Yang, X.,** Ram, N., & Molenaar, P. C. M. A Boolean network approach for study of children's and adolescents' intra- and inter-personal dynamics. *Quantitative Development System Seminar*, University Park, PA.
- Yang, X.,** Ram, N., et al. Pompom: Person-oriented method and perturbation on the model. *The 3rd Annual HDFS Symposium*, University Park, PA.
- Yang, X.** Dynamic system methods in developmental science. *Colloquium of NIH T32: Psychosocial Determinants and Biological Pathway to Healthy Aging*. Pennsylvania State University, University Park, PA.

2018

- Yang, X.,** Ram, N., Gest, S., Lydon, D., Conroy, D. E., Pincus, A. L., & Molenaar, P. C. M. Extracting network metrics from socioemotional dynamics to explain depressive symptoms. *ABCDS' of HDFS: Interdisciplinary Approaches to Individual & Family Development Across the Lifespan*. Pennsylvania State University, University Park, PA.
- Yang, X.,** Ram, N. Translating stock trading techniques into machine learning methods to predict behavior-switch on smartphones. *Colloquium of the Center for Health Organization Transformation (CHOT)*. Pennsylvania State University, University Park, PA.
- Yang, X.,** Chiatti, A., & Ram, N. Using machine learning methods to predict switch of digital-mediated behavior. *Quantitative Development System Seminar*, Pennsylvania State University, University Park, PA.

2017

- Yang, X.,** Ram, N., & Molenaar, P. C. M. Robustness of a hybrid method: merging intraindividual variability and network analysis. *Quantitative Development System Seminar*, Pennsylvania State University, University Park, PA.

OPEN SOURCE STATISTICAL SOFTWARE DEVELOPMENT

Yang, X., Ram, N., Molenaar, & P. C. M. **R package “pompom”** (person-oriented modeling + perturbation on model), <https://cran.r-project.org/web/packages/pompom/index.html>, <https://github.com/vwendy/pompom>. A hybrid method of time-series modeling and impulse response analysis. The hybrid method will provide a multivariate intraindividual variability metric (iRAM) for a given multivariate time-series. This metric indicates variable-to-variable influence via the inferred dynamics on the network.

TEACHING EXPERIENCE

Invited Instructor (recurring workshop)

2019-2022 American Psychological Association (APA) Advanced Training Institute on “Analysis of Intensive Longitudinal Data: Experience Sampling and Ecological Momentary Assessment”

Instructor

2019 PSU R Bootcamp

Guest Lecturer

HDFS 523 Strategies for Data Analysis in Developmental Research

Teaching Assistant

HDFS 129 Introduction to Human Development and Family Studies

Tutorials

American Psychological Association (APA) Advanced Training Institute

[Multivariate Dynamics and Networks](#)

[Generalized Multilevel Model](#)

[Data, Descriptive & Data Viz](#)

Boolean network analysis of time-series

[Part 1 Binary data](#)

[Part 2 Continuous-scale data](#)

[Impulse response analysis to extract network metrics](#)

[Socioemotional dynamics of emotion regulation and depressive symptoms: A person-specific network approach](#)

[Hybrid method: merging intraindividual variability and network analysis](#)

Growth Modeling Structural Equation and Multilevel Modeling Approaches. K. Grimm, N. Ram & R. Estabrook (Eds.)

Chapter 8 [Multivariate growth models and dynamic predictors](#)

Chapter 16 [Latent change scores as framework for studying change](#)

PROFESSIONAL SERVICE

Peer-review for Multivariate Behavior Research

2020-2021

Peer-review for Psychological Methods

2020

Peer-review for Journal of Psychosomatic Research

2020

Peer-review for Structural Equation Modeling

2020

Peer-review for Applied Developmental Science
2019

Peer-review for British Journal of Mathematical and Statistical Psychology
2017

MEDIA COVERAGE

Video interview on Screenomics

Link to the video: <https://www.youtube.com/watch?v=PIQdv7jtI58>

2018

Video interview on Playing The Archive Data Musik

Link to the video: <https://www.youtube.com/watch?v=ISzrEFarcM0>

2017

PROFESSIONAL MEMBERSHIP

The Gerontological Society of America

Psychometric Society

ACM SIGCHI - Special Interest Group in Human Computer Interaction

TRAINING AND CERTIFICATION

Neural Networks and Deep Learning (Instructor: Andrew Ng) from Coursera

(<https://www.coursera.org/account/accomplishments/verify/HY58SMZMVQN7>) 2020

Fundamentals of Reinforcement Learning (Instructors: Martha White) from Coursera

(<https://www.coursera.org/account/accomplishments/verify/AP7CTBJRE R83>) 2020

American Psychological Association (APA) Advanced Training Institute on "Analysis of Intensive Longitudinal Data"

2019

Agent-Based Modeling for Population Health, Columbia University

2019

Workshop on National Science Foundation Proposals, Dr. David Weiss (Professor of Physics), Pennsylvania State University

Seminar on National Institute of Health Proposals, Dr. Kent Vrana (Professor and Chair of Pharmacology), Pennsylvania State University