Natasha Yamane

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EDUCATION

2020–2025 **PhD**, Personal Health Informatics
Northeastern University, Boston, MA
Doctoral Thesis: "Multimodal assessment of biobehavioral synchrony in parent–child dyads: A multimethod approach"
Committee: Drs. Matthew S. Goodwin (advisor), Varun Mishra, Aston K. McCullough, and Siwei Liu

2016–2018 **MA**, Clinical Psychology
Teachers College, Columbia University, New York, NY
Master's Thesis: "Identifying vocal-motor behaviors of joint engagement in parents and children with autism spectrum disorder"

2008–2012 **BA**, Psychology
Barnard College, Columbia University, New York, NY
Undergraduate Thesis: "Prenatal maternal psychopathology and mother-child emotional availability"

WORK EXPERIENCE

Positions

2020–Present **Research Assistant/Lab Manager**
Computational Behavioral Science Lab, Northeastern University
(PI: Matthew S. Goodwin, PhD)

2017–2020 **Research Assistant**
Child Neurology, Columbia University Irving Medical Center
(PI: Sylvie Goldman, PhD)

2017–2019 **Research Assistant**
Child Psychiatry, New York State Psychiatric Institute
(PI: Beatrice Beebe, PhD)

2011–2012 **Research Intern**
Developmental Neuroscience, New York State Psychiatric Institute
(PI: Michael Myers, PhD)

2010 **Research Intern**
Neurocentre Magendie, Université de Bordeaux, INSERM
(PI: Stéphane Oliet, PhD)

Selected Research Projects (✢ Involvement as project lead; ✦ Academic thesis/exam)

2024–2025 **A multimodal and multimethod assessment of dyadic biobehavioral synchrony in children with autism spectrum disorder ✢✦**
This dissertation investigates the use of multiple modalities and time series techniques to: 1) validate measures of behavioral and physiological synchrony in parent-child dyads with and without autism spectrum disorder, and 2) highlight the interplay between behavioral and physiological dynamics underlying social behaviors in autism. [https://osf.io/zth96_v1]

2022–Present **Regulating Together: An intensive outpatient group treatment targeting emotional dysregulation** (PI: Rebecca Shaffer, PsyD)
This clinical trial evaluates the efficacy of an emotion regulation intervention with autistic youth and their caregivers and to identify barriers, facilitators, and predictors of treatment responsiveness. Responsibilities: Physiological data collection consulting; data quality assessment and processing.

2022–Present **Developing an open-source web-based quality assessment pipeline for analysis of ambulatory physiological data ✢**
This project involves developing an open-source interactive web-based visualization tool that performs automated signal quality assessment by identifying artifacts and missing data in ambulatory cardiovascular and electrodermal activity recordings. [https://github.com/cbslneu/physioview]

2023 **Contemporary biosensing technologies and systems for music-based stress management ✢✦**
This PhD qualifying exam reviews and categorizes recent biosensing technologies integrated with music for stress management, identifying trends and research gaps to guide future work in music therapy and affective computing.

2023 **From beat to better: Exploring music-based entrainment for health ✢✦**
This PhD qualifying exam reviews evidence of music's health benefits through intrapersonal and interpersonal entrainment, identifying key research directions to guide health and music psychology experts in developing music-based interventions.

2020–2021 **Physiological mechanisms of action relating to immediate and long-term therapeutic horseback riding intervention effects in a psychiatric population of youth with autism spectrum disorder** (PI: Robin Gabriels, PsyD)
This randomized control trial seeks assesses the physiological mechanisms underlying the effects of Therapeutic Horseback Riding on youth with autism. Responsibilities: Data collection training and consulting; cardiac and electrodermal activity data quality assessment.

PUBLICATIONS

Journal Articles

J1. Dunn, J., Mishra, V., Shandhi, M. M. H., Jeong, H., **Yamane, N.**, Watanabe, Y., Chen, B., and Goodwin, M. S. (2025). Building an open-source community to enhance autonomic nervous system signal analysis: DBDP-autonomic. *Frontiers in Digital Health*, 6, 1–8. https://doi.org/10.3389/fdgth.2024.1467424

J2. **Yamane, N.**, Snow, A. D., Fein, D., Naigles, L., and Goldman, S. (2022). Brief report: Parent-guided movements during play with children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 94, Article 101968. https://doi.org/10.1016/j.rasd.2022.101968

J3. Ardalan, A., **Yamane, N.**, Rao, A. K., Montes, J., and Goldman, S. (2021). Analysis of gait synchrony and balance in neurodevelopmental disorders using computer vision techniques. *Health Informatics Journal, 27*(4), 1–12. https://doi.org/10.1177/14604582211055650

J4. Abbruzzese, L. D., **Yamane, N.**, Fein, D., Naigles, L., and Goldman, S. (2020). Assessing child postural variability: Development, feasibility, and reliability of a video coding system. *Physical and Occupational Therapy in Pediatrics, 41*(3), 314–325. https://doi.org/10.1080/01942638.2020.1833272

Conference Proceedings

C1. Watanabe, Y., **Yamane, N.**, Sathyanarayana, A., Mishra, V., & Goodwin, M. S. (2025). Beyond motion artifacts: Optimizing PPG preprocessing for accurate pulse rate variability estimation. In *Companion of the 2025 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp Companion '25)* (pp. 1176–1182). ACM. https://doi.org/10.1145/3714394.3756241

C2. Murali, P., **Yamane, N.**, Hernandez, J., Marsella, S., Goodwin, M., & Bickmore, T. (2025). Feeling-the-Beat: Enhancing empathy and engagement during public speaking through heart rate sharing. In *2024 12th International Conference on Affective Computing and Intelligent Interaction (ACII)* (pp. 125-133). IEEE. https://doi.org/10.1109/ACII63134.2024.00019

C3. **Yamane, N.**, Mishra, V., & Goodwin, M. S. (2024). HeartView: An extensible, open-source, web-based signal quality assessment pipeline for ambulatory cardiovascular data. In D. Salvi, P. Van Gorp, & S. A. Shah (Eds.), *Pervasive Computing Technologies for Healthcare* (pp. 107–123). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-59717-6_8

Working Papers

W1. **Yamane, N.** and Goodwin, M. S. (202). Nonlinear dynamics of parent–child cardiac synchrony during play in autism: Sociobehavioral correlates and links to social communication. (Manuscript in preparation for *Autism Research*)

W2. **Yamane, N.**, Mishra, V., & Goodwin, M. S. (2025). Toward music-based stress management: Contemporary biosensing systems for affective regulation. *arXiv preprint arXiv:2507.16074*. https://doi.org/10.48550/arXiv.2507.16074 (Under review at *BMC Digital Health*)

W3. Goldman, S., Martin, M. J., Ehteshami, L., & **Yamane, N.** (2025). Increased gendered appearance in toddler girls with autism via video-coding. (Under revision for *Archives of Sexual Behavior*)

PRESENTATIONS

Talks

T1. Murali, P., **Yamane, N.**, Hernandez, J., Marsella, S., Goodwin, M., & Bickmore, T. (2024, September). *Feeling-the-Beat: Enhancing empathy and engagement during public speaking through heart rate sharing.* ACII 2024: 12th International Conference on Affective Computing & Intelligent Interaction, Glasgow, Scotland.

T2. **Yamane, N.**, Mishra, V., and Goodwin, M. S. (2023, November). *HeartView: An extensible, open-source, web-based signal quality assessment pipeline for ambulatory cardiovascular data.* EAI PervasiveHealth 2023: 17th International EAI Conference on Pervasive Computing Technologies for Healthcare, Malmö, Sweden.

T3. **Yamane, N.** (2021, April). *Gender disparities in autism spectrum disorder.* Dept. of Health Sciences, Northeastern University, Boston, MA, USA.

T4. **Yamane, N.** (2020, March). *Parents' use of music with children with autism spectrum disorder.* Dept. of Psychology, University of British Columbia, Vancouver, BC, Canada.

T5. **Yamane, N.**, McCullough, A. K., & Goldman, S. (2018, May). Vocal-motor analysis of joint engagement in parents and children with autism spectrum disorder. Inaugural Student Showcase, Child and Adolescent Mental Health Project, Columbia University, New York, NY, USA.

T6. **Yamane, N. M.** (2012, May). *Antepartum psychopathology: A predictor of postpartum emotional availability?*. Twelfth Annual Stanford Undergraduate Psychology Conference at Stanford University, Stanford, CA, USA.

Posters

P1. **Yamane, N.**, Lansberry, H., & Goodwin, M. S., (2025, May). *An exploratory study of cardiac synchrony and joint engagement in parent-child dyads of autistic and neurotypical children.* 2025 INSAR Annual Meeting, Seattle, WA, USA.

P2. Goldman, S., Martin, M. J., Ehteshami, L., & **Yamane, N.** (2022, May). *Increased feminine gender markers in toddler girls with and without autism spectrum*. 2022 INSAR Annual Meeting, Austin, TX, USA.

P3. Ardalan, A., **Yamane, N.**, & Goldman, S. (2021, May). *A computational approach for analyzing gait synchrony and balance in neurodevelopmental disorders*. 2021 INSAR Annual Meeting, Boston, MA, USA.

P4. Goldman, S., Isler, J., **Yamane, N.**, Wyne, S., Myers, M., & Tottenham, N. (2020, May). *An EEG study of music and speech processing in children with autism spectrum disorder*. 2020 INSAR Annual Meeting, Seattle, WA, USA.

P5. Goldman, S., Isler, J., **Yamane, N.**, Wyne, S., Myers, M., & Tottenham, N. (2019, August). *An EEG study of music and speech processing in children with autism spectrum disorder*. 2019 Biennial Meeting of the Society for Music Perception and Cognition, New York, NY, USA.

P6. Goldman, S., McGowan, N., Thapa, L, **Yamane, N. M.**, Fein, D., Naigles, L., & Abbruzzese, L. D. (2019, May). *W-sitting and sociomotor behaviors in toddlers with autism spectrum disorders: True or false?*. 2019 INSAR Annual Meeting, Montreal, QC, Canada.

P7. Beebe, B., Lee, S. H., DelGaudio, R., Hersche, E., Sherwin, E., Abrahams, L., Carney, S., Davis, A., Malouta, C., Kahya, Y., Raudales, A. Roman, M., **Yamane, N.**, Bowman, A., & Ende, R. (2019, May). *Risk and resilience in 9/11 pregnant widows and their infants at one year*. 31st Annual Convention of the Association for Psychological Science, Washington, DC, USA.

P8. Beebe, B., Margolis, A., Lee, S. H., Peterson, B., Dailami, M., Davis, A., Emanet, N., Zhong, D., **Yamane, N.**, Rahman, M., Joseph, J., Staniaszek, K., Malouta, C., Levy, J., & Banker, S. (2018, July). *Clustering infant communication: Carving nature at its joints.* ICIS 2018 of the International Congress of Infant Studies, Philadelphia, PA, USA.

P9. **Yamane, N. M.**, McCullough, A. K., & Goldman, S. (2018, April). *Identifying vocal-motor behaviors of joint engagement in children with autism spectrum disorder and their parents*. 2nd Annual Women in Science at Columbia Graduate Research Symposium at Columbia University, New York, NY, USA.

Demonstrations

D1. **Yamane, N.**, *HeartView*. "From the Lab to the Real World: Challenges and Opportunities with Wearables" Pre-Conference Workshop, 2024 Society for Psychophysiological Research (SPR) Annual Meeting, Prague, Czech Republic.

D2. **Yamane, N.**, Mishra, V., & Goodwin, M. S. (2023, May). *Developing an open-source web-based data quality assessment pipeline for analysis of ambulatory cardiovascular data in individuals with autism*. 2023 INSAR Annual Meeting, Stockholm, Sweden.

TOOLS & SOFTWARE

S1. **pyrr** (2025; in active development): An open-source Python package and desktop application for interrater reliability analysis of sequential observational data. https://github.com/nmy2103/pyrr

S2. **pyvocals** (2025; actively maintained; in stable release): A Python package for vocal turn-taking feature extraction. https://doi.org/10.5281/zenodo.14933999

S3. **PhysioView** (2023; formerly 'HeartView'; actively maintained; in stable release): An open-source Python package and web-based dashboard for ambulatory cardiac data pre-processing and quality assessment. https://doi.org/10.1007/978-3-031-59717-6_8

TEACHING

2025, Spring	**Guest Lecturer**, February 13, 2025 *CS 7300: Empirical Research Methods for Human Computer Interaction* Khoury College of Computer Sciences, Northeastern University, Boston, MA
2023, Spring	**Guest Lecturer**, January 20, 2023 *PHTH 4202: Principles of Epidemiology in Medicine and Public Health* Bouvé College of Health Sciences, Northeastern University, Boston, MA
2022, Spring	**Instructor of Record**; Developer of course materials *CS 4910: Wearables and Biobehavioral Health* Khoury College of Computer Sciences, Northeastern University, Boston, MA
2021, Spring	**Teaching Assistant** *PHTH 4202: Principles of Epidemiology in Medicine and Public Health* Bouvé College of Health Sciences, Northeastern University, Boston, MA
2020, Falll	**Teaching Assistant** *PHTH 4202: Principles of Epidemiology in Medicine and Public Health* Bouvé College of Health Sciences, Northeastern University, Boston, MA

MENTORSHIP

2024	Julian Gonzales, Capstone for BS in Health Science Co-advisor (with Prof. Matthew Goodwin) Bouvé College of Health Sciences, Northeastern University, Boston, MA
2023–2024	Nasim Sheikhi, Capstone for BS in Behavioral Neuroscience Co-advisor (with Prof. Matthew Goodwin) College of Science, Northeastern University, Boston, MA
2022–2023	Adele Rossignol, Undergraduate Thesis for BA in Psychology Co-advisor (with Prof. Matthew Goodwin) Wheaton College, Norton, MA

AWARDS

2018–2019 **Seed Grants for Interdisciplinary Projects** ($3,000; Role: Co-PI)
Center for Science and Society at Columbia University
Project: "Sex, gender, and autism spectrum disorder"
A seminar series aimed to inform and illuminate students on the impact of sex and gender on autism diagnosis, including implications for child and family interventions and legal services. Discussions have generated proposals for future research projects.

SERVICE

2024–Present	Journal of Open Source Software (JOSS), *Reviewer*
2023–2024	Khoury College PhD Committee, *Student Rep (Personal Health Informatics)*
2023–2024	Khoury College Social Activities Committee, *Officer*
2023	EAI Pervasive Health 2023, *Reviewer*
2022–2023	Personal Health Informatics Journal Club, *Leader*
2017–2019	AAPA Asian American Psychologist Newsletter, *Layout Editor*
2017–2018	Music for Autism, *Volunteer*
2016–2018	AAPA National Convention, *Senior Media Co-Chair*
2016–2018	Apex for Youth, *Mentor*

MEMBERSHIP

2024–Present	Society for Psychophysiological Research (SPR), *Student Member*
2021–Present	Graduate Employees of Northeastern University, *Member*
2020–Present	International Society for Autism Research (INSAR), *Student Member*
2020–Present	Khoury PhD Women, Northeastern University, *Member*
2017–Present	Psi Chi International Honor Society in Psychology, *Graduate Member*
2019–2020	Society for Music Perception and Cognition (SMPC), *Member*
2016–2019	Asian American Psychological Association (AAPA), *Student Member*