

CURRICULUM VITAE

Sofia Tancredi

sofiatancredi@berkeley.edu
617-710-4980

Google Scholar
ORCID 0000-0002-4185-0496
sofiatancredi.com

EDUCATION

- May 2024 (expected) **University of California Berkeley & San Francisco State University**
Joint PhD program in Special Education (Learning Sciences and Human Development at UC Berkeley + Special Education at SFSU)
Embodied Design Research Laboratory (PI: Dor Abrahamson)
Dissertation: “Design-based integration of regulatory and conceptual movement forms in inclusive math instruction”
- May 2014 **Harvard University**
B.A. in Literature, secondary field: Mind, Brain, Behavior, magna cum laude
Systems Neuroscience of Psychopathology Laboratory (PI: Joshua Buckholz)

EMPLOYMENT

- 2019-2024** **University of California, Berkeley** **Berkeley, CA**
Graduate Student Instructor
- 2014-2018** **Axiom Learning** **CA, MA, and Malaysia**
Vice President of Education (2016-2018)
Education Manager (2015-2016)
Faculty at Learning Lab (2014-2015)

PUBLICATIONS

Refereed Journal Articles

- Tancredi, S. (in press). Balance Board Math: Exploring the sense of balance as a basis for functions and graphing and number line concepts. *Digital Experiences in Mathematics Education*.
- Abdu, R., Tancredi, S., Abrahamson, D., & Balasubramaniam, R. (2023). A complex systems outlook on hand-eye coordination in mathematical learning. In M. Schindler, A. Shvarts, & A. Lilienthal. (Eds.), Eye-tracking research in mathematics education [Special issue]. *Educational Studies in Mathematics*. <https://doi.org/10.1007/s10649-023-10279-0>
- Lambert, S. G., Tancredi, S., Fiedler, B. L., Moore, E. B., Gorlewicz, J. L., Abrahamson, D., & Gomez Paloma, F. (2022). Getting a grip on geometry: Developing a tangible manipulative for inclusive quadrilateral learning. *Italian Journal of Health Education, Sports and Inclusive Didactics*, 6(1), 1–21. <https://doi.org/10.32043/gsd.v6i1.604>

- Tancredi, S., Chen, R. S. Y., Krause, C., Abrahamson, D., & Gomez Paloma, F. (2021). Getting up to SpEED: Special Education Embodied Design for sensorially equitable inclusion. *Education Sciences and Society – Open Access*, 12(1). <https://doi.org/10.3280/ess1-2021oa11818>
- Tancredi, S., Abdu, R., Abrahamson, D., & Balasubramaniam, R. (2021). Modeling nonlinear dynamics of fluency development in an embodied-design mathematics learning environment with Recurrence Quantification Analysis. *International Journal of Child-Computer Interaction*, 100297. <https://doi.org/10.1016/j.ijcci.2021.100297>

Book Chapters

- Abrahamson, D., Tancredi, S., Chen, R.S.Y., Flood, V.J., Dutton, E. (2023). Embodied design of digital resources for mathematics education: Theory, methodology, and framework of a pedagogical research program. In: Pepin, B., Gueudet, G., Choppin, J. (eds) *Handbook of Digital Resources in Mathematics Education*. Springer International Handbooks of Education. Springer, Cham. https://doi.org/10.1007/978-3-030-95060-6_8-1
- Tancredi, S., Abdu, R., Balasubramaniam, R., & Abrahamson, D. (2022). Intermodality in multimodal learning analytics for cognitive theory development: A case from embodied design for mathematics learning. In M. Giannakos, D. Spikol, D. Di Mitri, K. Sharma, X. Ochoa, & R. Hammad (Eds.), *Multimodal learning analytics*. Springer. https://doi.org/10.1007/978-3-031-08076-0_6
- Tancredi, S., Chen, R. S. Y., Krause, C., & Siu, Y.–T. (2022). The need for SpEED: Rationale and guiding principles for Special-Education Embodied Design. In S. Macrine & J. Fugate (Eds.), *Movement matters: How embodied cognition informs teaching and learning*. M.I.T. Press. <https://doi.org/10.7551/mitpress/13593.003.0021>

Refereed Conference Proceedings

(* denotes student/mentee author)

- Sar-Israel, M.*, Zhang, F. E.*, Liu, Y.*, & Tancredi, S. (in press). Tracking sensory regulation and learning in an embodied design with electrodermal activity: A comparative case study. *Proceedings of the 18th International Conference of the Learning Sciences – ICLS 2024*. (Vol. “Short papers”).
- Tancredi, S., Wang*, J. X., Li*, H. L., Yao*, C. J., Macfarlan*, G. L., & Ryokai, K. (2022). Balance Board Math: “Being the graph” through the sense of balance for embodied self-regulation and learning. In M. Horn, M. Giannakos, & T. Pontual (Eds.), *Proceedings of IDC ’22: Interaction Design and Children* (Vol. “Full papers”, pp. 137–149). <https://doi.org/10.1145/3501712.3529743>
- Tancredi, S., Wang*, J., Li*, H. T., Yao*, C. J., Ryokai, K., & Abrahamson, D. (2022). Graphing with Balance Board Math: Critical embodied design for regulation and learning. *Proceedings of the 16th International Conference of the Learning Sciences – ICLS 2022*. Hiroshima, Japan: International Society of the Learning Sciences.
- Tancredi, S., Abdu, R., Abrahamson, D., & Balasubramaniam, R. (2021). Proof of concept: Applying recurrence quantification analysis to model nonlinear dynamics of mathematics learning in an embodied design. In E. de Vries, J. Ahn, & Y. Hod (Eds.), *Reflecting the past and embracing the future—Proceedings of the annual conference of the International Society of the Learning Sciences*. Ruhr-Universität Bochum.

GRANTS, FELLOWSHIPS, AWARDS

- 2019-2024 **National Science Foundation Graduate Research Fellowship Program (NSF-GRFP)**
“Math and Movement: Integrating Sensory Regulation and Conceptual Learning”
National Science Foundation, \$138,000
Individual 5-year fellowship
- 2022 **Ignite Innovation Catalyst Grant**
“Balance Board Math” prototype development
The Jacobs Institute for Design Innovation, \$1,800
Project director
- 2022 **Bell Burkhardt Daro Shell Centre Award**
Individual design award for Aspiring Educational Designers in Science, Technology, Engineering, and Mathematics
International Society for Design and Development in Education, \$1,000
- 2021 **Spark Innovation Catalyst Grant**
“Balance Board Math” initial prototyping
The Jacobs Institute for Design Innovation, \$500
Project director
- 2018 **Gates K-12 Education Grant**
“Learning Efficiency Acceleration Program: Axiom Learning + Summit collaboration”
Bill and Melinda Gates Foundation, \$1,084,674
Co-authored grant proposal with upper management team at Axiom Learning

INVITED TALKS AND WORKSHOPS

- Tancredi, S. (2023, December). *Math learning as intermodal coordination: A dynamical systems analysis of learning with embodied design interactive technology*. Invited colloquium talk, RiSE Center's STEM Education Research Colloquium (virtual), University of Maine, December 4, 2023.
- Tancredi, S. (2023, November) *Opportunities with nonlinear methods and embodied learning data*. Invited talk, Human-Computer-Relations at Work Network Community Meeting (virtual), November 15, 2023.
- Tancredi, S. & Lee, S. (2023, November) *Embodied learning for special education students: A research-practice conversation*. Invited interview, Special Education Network Inclusion Association (SENIA) Beijing 2023 Conference, November 3, 2023.
- Tancredi, S. (2022, July). *Balance Board Math: A design-based research project cultivating "being the graph" through the sense of balance*. Invited talk, Centrum Nauki Kopernik (Copernicus Science Center), Warsaw, Poland, July 12, 2022.

- Palmer, C., Tancredi, S., Upham, F. (2022, May). *Complex data analysis*. Invited talk, RITPART Workshop: Rhythm Rising, RITMO Centre for Interdisciplinary Studies in Rhythm, Time and Motion, University of Oslo, Norway, May 24, 2022.
- Chen, R. S. Y., & Tancredi, S. (2022, May). *Special Education Embodied Design (SpEED)*. Invited workshop, RITPART Workshop: Rhythm Rising, RITMO Centre for Interdisciplinary Studies in Rhythm, Time and Motion, University of Oslo, Norway, May 24, 2022.
- Krause, C.M., Chen, R. S. Y., Tancredi, S., Cooper, B., Foley, E., Anton, J., Kim, J., & Abrahamson, D. (2021, October). *Catching up with SpEED: Applying a framework for inclusive equitable learning opportunities through Special Education Embodied Design*. Invited workshop, Unimc for Inclusion Settimana dell'inclusione (Inclusion Week), University of Macerata, Italy, October 25, 2021.
- Tancredi, S., Chen, R. S. Y., Krause, C., & Abrahamson, D. (2021, March). *Getting up to SpEED: Special education embodied design for sensorially equitable inclusion*. Invited keynote in F. Gomez Paloma (Convener), Inclusion Week. University of Macerata, Italy, March 16, 2021.

CONFERENCE PARTICIPATION

Symposia and Panels Organized

- Tancredi, S. & Vickery, M. (June 2024). *Learning for every body: Intersectional dimensions of embodied learning*. International Society for the Learning Sciences (ISLS), Buffalo, NY.
- Tancredi, S., Chen, R. S. Y., & Krause, C. (2021, May 6-9). *SpEEDing towards equitable instruction: Special Education Embodied Design for sensory diversity*. Uncommon Senses III: Back to the Future of the Senses, Montreal, Canada.
- Tancredi, S., Chen, R. S. Y., & Krause, C. (2020, February 2). *The need for SpEED: Special Education Embodied Design*. The Conference for University of California Center for Research on Special Education, Disabilities, and Developmental Risk (UC-SPEDDR), Los Angeles, CA.

Conference Presentations

- Tancredi, S. (forthcoming in 2024, May 30-June 1). Beyond sensory periodization: Sensorimotor pathways for neurodivergent learners of mathematics. In Dorothy Cowie (chair), *How diverse sensorimotor experiences shape behavior and the brain*. Jean Piaget Society conference. Toronto, Canada.
- Lambert, S. G., Tancredi, S., Fiedler, B. L., Gorlewicz, J. L., Abrahamson, D. (2022, April). *Building the Quad: A tangible manipulative for inclusive geometry learning*. In F. C. Peluso (Chair), The 2nd International Conference on Research on Educational Neuroscience: School, Sports, & Society (REN). Rome, Italy, April 1. [awarded best paper]
- Tancredi, S. & Chen, R. S. Y. (2019, May). *Centering disability and neurodiversity in embodied design*. The EMIC Synthesis and Design Workshop: The Future of Embodied Design for Mathematical Imagination and Cognition, University of Wisconsin, Madison, WI.
- Tancredi, S. (2019, January) *Sensory Regulation and Embodied Design*. AccessCyberlearning Capacity Building Institute, Seattle, WA.

TEACHING AND MENTORING

Teaching

- 2021-present *Cultivating Cognitive Development: The Sensorimotor Origins of Concepts*
Graduate seminar (Spring 2021, 2022, 2024)
Co-designer and co-instructor with Professor Dor Abrahamson
University of California, Berkeley
- 2019 *Introduction to Cognitive Science*
Undergraduate lecture course
Graduate Student Instructor: taught two weekly class sections
University of California, Berkeley

Mentorship

- 2020-2023 Research and design: undergraduate students (9); graduate students (3)
2015-2018 Management and teaching: Axiom Learning managers (14) and faculty (15)

SERVICE

National

- International Society for the Learning Sciences* reviewer, 2021-present
Interaction Design and Children reviewer, 2022-present
Journal of the Learning Sciences; *International Journal of Science and Mathematics Education*;
Canadian Journal of Science, Mathematics, and Technology Education; *Transactions on Learning Technologies*, ad hoc reviewer

Graduate School of Education

- Panelist, Berkeley School of Education graduate student orientation, 2023
Lab coordinator, Embodied Design Research Lab, 2018-2022
Editor, Berkeley Review of Education, 2019-2020
Convener, Special Education Embodied Design graduate working group, 2019-2021
Note-taker, Disabled Student Program, 2019

PROFESSIONAL ASSOCIATIONS

- International Society of the Learning Sciences (ISLS)*
2023 doctoral consortium selectee
- American Educational Research Association (AERA) – Division C: Learning and Instruction*
2023 SIG: Advanced Technologies for Learning / SIG: Learning Sciences mentee
- American Psychological Association (APA)*
2019 Advanced Training Institute on Nonlinear Methods in Psychological Science
participant