Benjamin Lira Luttges

PhD Candidate at University of Pennsylvania

lirabenjamin.github.io blira@sas.upenn.edu 3720 Walnut St., Philadelphia, PA. +1 813 362 0500

My research explores how interactions with AI systems shape human learning, motivation, judgment, and decision-making. I design AI-powered interfaces–including conversational chatbots and intelligent writing assistants–as well as AI-driven decision-support tools (e.g., custom-trained language models for evaluating soft skills in college admissions), and systematically assess their psychological and social implications. Through pre-registered experimental studies, advanced NLP techniques, and analyses of real-world data, my work seeks to uncover how engagement with AI can durably augment—rather than replace or hinder—human capabilities.

1. Education

2021—2026	University of Pennsylvania PhD and MA in Psychology. GPA 4.0 Advisor: Angela Duckworth Dissertation: Enhancing Human Capabilities Through Interaction with Generative AI
2009—2017	Universidad de Lima BA. and Professional Licensure in Psychology. GPA 4.0 Thesis: Parental Predictors of Effortful Control
2013	Katholieke Universiteit Leuven, Belgium Exchange student in master level courses on AI and Education

2. Key Projects

Generative AI Impacts in Cognition: Designed and implemented AI-driven writing and research assistants. Found substantial improvements in users' critical thinking and writing skills that persist when tool is not in use.

Chatbot Systems for Qualitative Research: Integrated AI-chatbot interview systems into Qualtrics user surveys and automated analysis pipelines, significantly scaling qualitative research data collection and processing.

AI for College Admissions: Built predictive language models trained on 300,000 college admission essays to reliably evaluate student soft skills, published in *Science Advances* and broadly covered by media (e.g., Forbes, Higher Ed Dive).

3. Selected Publications and Conference Presentations

See Google Scholar for the full list of 14 publications, cited 440 times.

A. Published

Lira, B., Duckworth, A. L., Gardner, M., Quirk, A., Stone, C., Rao, A., ... & D'Mello, S. K. (2023) Using Artificial Intelligence to Assess Personal Qualities in College Admissions. *Science Advances.* [link] Press Coverage. [Forbes][Counselor Bites][Higher Ed Dive][Inside Higher Ed][CU Boulder Today][University World News][EurekAlert!]

Lira, B., O'Brien, J., Peña, P.A., Galla, B.M., D'Mello, S., Yeager, D.S., Defnet, A., Kautz, T., Munkacsy, K., Duckworth, A.L., (2022). Large Studies Reveal How Reference Bias Limits Policy Applications of Self-Report Measures. *Scientific Reports 12*(1) 19189. [link]

Lira, B., Goldstein, D., Rogers, T., Ungar, L., & Duckworth, A.L., Teaching by Example: Evidence that AI can improve writing skill. [ArXiv. Submitted to PNAS.]

B. In Preparation

Lira, B., Goldstein, D., Rogers, T., Ungar, L., & Duckworth, A.L., Smart and Smarter. Pairing AI examples and metacognition improves writing skill.

Lira, B., Gross, J., & Duckworth, A.L., Delivering motivational interventions at scale using Artificial Intelligence in Khan Academy.

Lira, B., Rogers, T., Ungar, L., & Duckworth, A.L., Conversing with a Generative-AI powered chatbot increased critical thinking.

C. Conference Presentations

Lira B., (2024, November), Can generative AI make you smart? Evidence that AI increases writing skill. NeurIPS Behavioral Machine Learning. Virtual.

Lira B., Duckworth, A., Toll, B., Kim, B., (2024, June), Admissions practices and strategy in the era of Artificial Intelligence and Big Data. Panel. Common App Illuminate Conference. Philadelphia, US.

Lira B., (2024, June), AI Fundamentals for Admissions Professionals. Enrollment Leaders Roundtable. Common App Illuminate Conference. Philadelphia, US. [slides]

Lira B., (2024, May), When will Generative AI Make Us Stupid and when will it make us Smart?. Talking to Machines Workshop at International Meeting on Experimental and Behavioral Social Sciences (IMEBESS). Riga, Latvia.

Lira B., (2024, February), Using Artificial Intelligence to Assess Personal Qualities in College Admissions. Society for Personality and Social Psychology Convention. San Diego.

Ungar, L., **Lira, B.,** (2023, November) Using Large Language Models to Help People be their 'Best' Selves. Psychology of Technology Conference. UC Berkeley. [link][slides]

Lira, B., (2022, June). Using Artificial Intelligence to Assess Personal Qualities in College Admissions. Summer Institutes for Computational Social Science [link].

4. Technical Skills

Programming. Python, R, Qualtrics, SPSS, Factor, MPlus, MLWin, Psychopy
ML/NLP/AI. Transformers, Deep Learning, Neural Networks, NLP (LDA, Naïve Bayes, etc.), Reinforcement Learning, Supervised and unsupervised learning (e.g., Random Forests, Boosting, Support Vector Machines, Auto-encoders)
Statistical Methods. Bayesian Modeling, Econometric Analysis, Social Network Analysis, Factor Analysis, Multilevel Modeling, Structural Equation Modeling, Cluster Analysis, Non-parametric Methods (Logistic, Poisson, Negative Binomial Regression, Beta regression.)
Natural Languages. Spanish—Native English—Fluent German—Basic

5. Work Experience

2024	**Data Scientist, Talking to Machines Project, Oxford University** Developed NLP-powered chatbot systems for scalable qualitative interviewing in social science research. Built robust data analysis pipelines to process and analyze large-scale conversational data.
2020–2021	**Visiting Scholar, Duckworth Lab, University of Pennsylvania** Collaborated closely on the design, data collection, statistical analysis, writing, and revision stages of multiple research projects. Mentored undergraduate researchers and high-school interns, guiding research activities and analytical skill development. Designed curriculum and statistical analysis modules to teach R programming to undergraduates.
2016 – 2020	**Research scientist, Pontificia Universidad Católica del Perú** Conducted empirical research on motivation and emotional well-being, focusing on poverty, maternal autonomy support, and educational engagement. Designed and evaluated behavioral interventions to promote autonomy support and psychological well-being in educational and sports contexts.
2015 – 2017	**Lead research analyst, Cerebrum** Designed, implemented, and evaluated psychological intervention programs aimed at enhancing cognitive and emotional regulation. Developed educational neuroscience course materials for graduate-level programs. Mentored graduate students, supervised thesis projects, and presented findings at academic and professional conferences.