

# Benjamin Lira Luttges

Duckworth Lab  
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## Interests

Self-Regulation  
Motivation

Artificial Intelligence  
Non-Cognitive Skills

## Education

- 2021 – 2026 University of Pennsylvania  
PhD in Psychology  
Advisor: Dr. Angela Duckworth
- 2015 – 2017 Universidad de Lima, Peru  
Professional Licensure in Psychology  
Thesis Topic: Parental predictors of children's effortful control  
Thesis Advisor: Carolina Camino, M.A.
- 2009 – 2015 Universidad de Lima, Peru  
B.A., Psychology. GPA 4.0 (18.6/20)  
Class Rank: 1<sup>st</sup> out of 40 psychology graduates
- 2013 Katholieke Universiteit Leuven, Belgium  
Exchange student in master level courses  
Relevant courses: Education, Society and Culture, Cognitive Science, Artificial Intelligence  
6 courses (29 credits)

## Grants and Awards

- 2018 Annual research competition winner, Pontificia Universidad Católica del Perú  
Awarded to the Motivation and Emotion Research Group (PUCP).  
Basic Psychological Needs in the Context of Poverty  
Grant Award: 135 000 and 45 000 PEN (53,576 USD)
- 2010 – 2015 Full honors scholarship, Universidad de Lima  
Est. Value: 146 523 PEN (43,612 USD)

## Academic Positions

- 2020 **Predoctoral Visiting Scholar**, University of Pennsylvania  
Duckworth Lab, PI: Angela Duckworth  
PSYC 005-401: Grit Lab (TA)
- 2017 – 2019 **Instructor**, Pontificia Universidad Católica del Perú  
PSB229: Motivation and Emotion  
2019 – 2: Enrollment 27. 2018 – 1: Enrollment 26.  
2019 – 1: Enrollment 51. 2017 – 2: Enrollment: 16.
- PSG207: Psychological Test Construction  
2018 – 1: Enrollment 49. 2017 – 2: Enrollment 51.
- PSG204: Psychological Research  
2017 – 2: Enrollment 28.

## Guest Lecturer

- 2018 Universidad Cayetano Heredia. Cognitive Behavioral Intervention Methods  
2021 University of Pennsylvania. Self-concordant Goals.

## Publications

[Google Scholar](#)

### Published

- 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.
- Lira, B.** & Lopez, F. E. (2022). Evaluación psicométrica de una escala de creencias conspirativas para población peruana [Psychometric evaluation of a conspiracy belief scale in a Peruvian population]. *Persona* 25, 33-51.
- Duckworth, A.L., Kautz, T., Defnet, A., Satlof-Bedrick, E., Talamas, S., **Lira, B.**, & Steinberg, L. (2021). Students Attending School Remotely Suffer Socially, Emotionally, and Academically. *Educational Researcher* 50(7), 479-482. <https://doi.org/10.3102/0013189X211031551> [\[link\]](#)
- Caffarena, C., **Lira, B.**, Campos, A.L., Rojas-Barahona, C. (2021). Psychometric properties of the Child Behavior Questionnaire (CBQ) in Chile. *Current Psychology*. 1-10. <https://doi.org/10.1007/s12144-021-01871-9> [\[link\]](#)
- Herrera, D., Matos, L., Gargurevich, R., **Lira, B.**, Valenzuela, R. (2021). Context matters: Teaching styles and basic psychological needs predicting flourishing and perfectionism in university music students. *Frontiers in Psychology* 12. 1-9. <https://doi.org/10.3389/fpsyg.2021.623312> [\[link\]](#)
- Lira, B.** (2017). The predictive role of parental and maternal emotion regulation, empathy, and alexithymia in toddler's effortful control. Universidad de Lima Undergraduate Thesis. [\[link\]](#)
- Gleichgerrcht, E., **Lira, B.**, Salvarezza, F., & Campos, A.L. (2015). Educational neuromyths among teachers in Latin America. *Mind, Brain, and Education* 9(3). 170–78. <https://doi.org/doi:10.1111/mbe.12086>. [\[link\]](#)
- Gleichgerrcht, E. & **Lira, B.** (2014). Attention: fostering educational neuroscience 5. Lima: Cerebrum Ediciones.

### Submitted

- Lira, B., Duckworth, A. L., Gardner, M., Quirk, A., Stone, C., Rao, A., ... & D'Mello, S. K. Using Human-Centered Artificial Intelligence to Assess Personal Qualities in College Admissions *Science Advances*. [\[link\]](#)
- Lira, B., Bartlett, Maria. E., Kautz, T., & Duckworth, A. L. (2022). Remote Schooling Depresses Grades for the Most Vulnerable. *Educational Researcher* [\[link\]](#)
- Matos, L., Herrera, D., Lira, B., Gargurevich, R., Benita, M. Perceived Teaching Styles, Basic Psychological Needs, Motivation, Engagement, Academic Achievement and Student Well-Being in a Peruvian in a low socioeconomic students' sample. Manuscript submitted for publication.
- Putnam, S., ..., **Lira, B.**, et al. Global temperament project. Manuscript in preparation.

### In Prep

- Lira, B., & Duckworth, A. L. What I see my role models do: Elucidating the mechanisms of reference bias. In preparation for *Psychological Methods*. [\[link\]](#)
- Lira, B., ... & Duckworth, A. L. Large Language Models make human coding in the social sciences obsolete. In preparation for *PNAS*. [\[link\]](#)
- Lira, B., ... & Duckworth, A. L. Towards a science of coaching. A language analysis of what makes coaching conversations succeed. In preparation for *PNAS*. [\[link\]](#)
- Lira, B., ... Gross, J., & Duckworth, A.L., Delivering motivational interventions at scale using Artificial Intelligence in Khan Academy.
- Lira, B., ... & Duckworth, A.L., Can admissions officers learn to tell real student essays from chatbot generated essays?

### Press coverage

- Duckworth et al., (2021) Students Attending School Remotely Suffer Socially, Emotionally, and Academically [\[HealthDay\]](#)[\[U.S. News\]](#)[\[The 74\]](#)[\[District Administration\]](#)[\[Yahoo\]](#)[\[Phys Org\]](#)

### Presentations

- Lira B.**, Seraj, S., Neiderhoffer, K., Ireland, M., (2023, February) Panel on collaboration between industry and academia. Language Preconference, Society for Personality and Social Psychology Convention. Atlanta.
- Chalén, J., **Lira B.**, & Herrera, D. (2022, July). Future Orientation, Wellbeing, Life Purpose & Academic Performance in University Students from Lima [Symposium]. 5<sup>th</sup> International Conference on Time Perspective. Vilnius, Lithuania (Virtual). [\[link\]](#)[\[link2\]](#)
- Lira, B.**, O'Brien, J., Peña, P., Galla, B. M., D'Mello, S., Yeager, D. S., Defnet, A., Kautz, T., Munkacsy, K., & Duckworth, A. L. (2022, July). Large Studies Reveal How Reference Bias Limits Policy Applications of Self-Report Measures. In C.J. Soto (Chair), *Conceptualization, Assessment, and Implications of Social, Emotional, and Behavioral Skills* [Symposium]. European Conference on Personality 2022, Madrid, Spain.
- Lira B.**, et al. (2021, September). Students Attending School Remotely Suffer Socially, Emotionally, and Academically. In B. Gill & E. Stuart (Chairs), *Mental and Physical Health Implications of School Operating*

*Approaches During the COVID-19 pandemic* [Symposium]. Society for Research on Educational Effectiveness Conference 2021. [\[link\]](#)

- Lira, B.** (2018, May). The predictive role of parental emotion regulation, empathy, and alexithymia on preschooler's effortful control [Poster presentation]. 22nd Occasional Temperament Conference (OTC). Murcia, Spain.
- Lira, B.** (2016, November). *Self-regulation and its impact in and out of the classroom* [Presentation]. Self-Regulation Seminar: Cerebrum. Puerto Varas, Chile. [\[link\]](#)
- Lira, B.** (2016, September). *Educational neuromyths in Latin America* [Conference Session]. Fifth Peruvian Society for Educational Research Conference (SIEP) Seminar. Ayacucho, Peru. [\[link\]](#)
- Lira, B.** (2016, September). *The importance of cognitive regulation in the classroom* [Presentation]. Self-regulation Seminar: Cerebrum. Medellin, Colombia. [\[link\]](#)
- Lira, B.** (2015, March). *Neurodiversity and Inclusion in Education* [Panel participant]. International Seminar on Neurodiversity: Cerebrum. Lima, Peru. [\[link\]](#)

## Selected Abstracts from ongoing work

### ***Using Machine Learning to Identify Personal Qualities in College Applications***

Can machine learning identify personal qualities from college application essays? We used three different approaches to extract features from students' descriptions of their extracurricular activities. We used supervised machine learning to detect seven personal qualities in a sample of 3,131 essays coded by human raters. We used topic modeling to score each essay on 60 topics derived from the contents of what students wrote. We used a dictionary approach (LIWC) to extract features about the style that students used in their essays. We found that these metrics were mostly unrelated to demographics and traditional admissions criteria. And yet, were weakly predictive of college graduation six years later, even after accounting for a rich suite of controls. Finally, we used simulations to show that using features coded from these essays in admissions decisions can result in higher admission rates of underrepresented groups, with mild costs on expected graduation rates. These findings highlight both the future potential and current limitations of artificial intelligence in college admissions.

### ***Large Studies Reveal How Reference Bias Limits Policy Applications of Self-Report Measures***

There is growing policy interest in identifying contexts that cultivate self-regulation. Doing so often entails comparing groups of individuals (e.g., from different schools). We show that self-report questionnaires—the most prevalent modality for assessing self-regulation—are prone to reference bias, defined as systematic error arising from differences in the implicit standards by which individuals evaluate behavior. In three studies, adolescents ( $N = 229,685$ ) whose peers performed better academically rated themselves lower in self-regulation and held higher standards for self-regulation. This effect was not observed for task measures of self-regulation and led to paradoxical predictions of college persistence six years later. These findings suggest that standards for self-regulation vary by social group, limiting the policy applications of self-report questionnaires.

### ***Boundary Conditions for Reference Bias***

Policymakers are increasingly interested in measuring, monitoring, and comparing groups in non-cognitive skills. This work has mostly relied on self-report measures. Reference bias refers to a systematic error that arises when individuals use different implicit standards to evaluate behavior. To this date, very little is known about the boundary conditions and the mechanisms by which reference bias works. Here, we expand tests of reference bias to include measures of character beyond self-regulation. We use rich, longitudinal, social network dataset ( $N = 4,400$  observations) to test what kinds of peers drive the reference bias effect. Our results replicate prior research, and extend it, by showing that reference bias distorts only academic character traits. Moreover, we show that students are influenced by other students that embody the character trait, rather than by friends with whom they spend time. Our findings suggest that not all self-reports are affected by reference bias equally, and that, counterintuitively, the effect is driven by exemplar peers rather than friends.

### **Technical Skills**

Programming: Qualtrics, R, SPSS, Factor, MPlus, MLWin, Psychopy

Statistical Methods: Exploratory and confirmatory factor analysis, multilevel modelling, structural equation modelling, cluster analysis, polynomial regression with response surface analysis (RSA), nonparametric regression methods including logistic, poisson, and negative binomial regression, and machine learning methods including tress, random forests, penalized regression, boosting, support vector machines, deep learning, neural networks, autoencoders, generalized mixture models, k-means, reinforcement learning, text modelling (transformers, LDA, naïve bayes).

## Work Experience

- 2020 – **Visiting scholar**, Duckworth Lab, University of Pennsylvania  
Duckworth Lab, PI: Angela Duckworth
- Participated in all aspects of the research process: conceptualization, data collection, data analysis, writing, submission and revision.
  - Mentored an undergraduate researcher and a group of high-school interns.
  - Designed activities for an undergraduate course on motivation.
  - Designed and taught a series of lessons on statistical analysis using R.
- 2016 – 2020 **Research assistant**, Pontificia Universidad Católica del Perú  
Motivation and Emotion Research Group. Projects:
- Basic psychological needs and poverty
  - Maternal autonomy support
  - Basic psychological need support and thwarting and engagement in school and university
  - Autonomy support intervention program
  - Need support and thwarting in competitive sports
- 2015 – 2017 **Lead research analyst**, Cerebrum
- Was responsible for research and intervention programs.
  - Taught and supervised graduate students' theses.
  - Wrote articles for the education community.
  - Participated in conferences.
  - Developed content for graduate courses in educational neuroscience.
- 2016 **Statistical consultant**, EVACP Consulting
- Carried out psychometric and statistical analysis for a social program impact evaluation for the Peace Corps in Peru.
- 2015 – **Thesis advisor**
- Coached and supported +30 undergraduate and graduate students from Universidad de Lima, Pontificia Universidad Católica del Perú, Universidad Peruana de Ciencias Aplicadas in multiple stages of their thesis projects.
- 2014 – 2015 **Research and educational psychology intern**, Cerebrum
- Created an intervention program for the development of self-regulation and executive function and designed a tool to evaluate its impact.
  - Developed content for graduate courses in educational neuroscience.
- 2013 **Assistant to Ricardo Braun Ph.D.**, Universidad de Lima
- Edited and reviewed a book manuscript about the philosophy of the mind.
- 2012 **Assistant to Sandra Inurritegui Ph.D.**, Universidad de Lima
- Designed the methodology, developed experiments, and coordinated school logistics.

## Languages

Spanish: Native

English: Advanced

German: Basic

## Additional Education

Foundations of Data Analysis – Part I. University of Texas at Austin. MOOC.

The Analytics Edge. MITx. MOOC.

Quantitative Biology Workshop. MITx. MOOC

## Additional Projects

- [#Investigatips](#). Video library explaining research methods and statistics. +55K video views. (In Spanish)
- Statistics for Psychologists with R. A series of self-guided tutorials and practice sets exploring common data manipulation, visualization, and analysis tasks in R. Collaboration with Chayce Baldwin
- [R Package](#). Custom functions for ordinal alpha, Mahalanobis outlier detection, discriminant validity analysis, and data simulation.
- R Programming. [Web application](#) to predict grape harvest dates and volumes based on weather and agricultural data.

### Community Service

- Volunteer for the program Un Techo Para Mi País, building houses after the Chinchá 2007 earthquake. Constructed 5 houses for the benefit of 5 families.
- Volunteer for CPDI, a malnutrition prevention center in Pampalona. Worked with the community to generate appropriate strategies to promote healthy eating habits.
- One hundred and fifty hours of service in the IB-CAS program: building homes, tutoring children, among other service labors.
- Volunteer for the Peruvian Ministry of Education. Conducted interviews with teachers and principals regarding the effectiveness of feedback received by schools after the Census Student Evaluation.

### Organizational Involvement

Member of Colegio de Psicólogos del Perú (National Association of Psychologists of Peru). CPsP. 31816

### Test Scores

Graduate Records Examination (GRE) – Nov 14, 2019.

Verbal: 169 (99<sup>th</sup> Pc.), Quantitative: 166 (89<sup>th</sup> Pc.), Analytical Writing: 5.5 (98<sup>th</sup> Pc.)

Test of English as a Second Language (TOEFL): 119/120 – Sept 28, 2019.

Writing: 30, Speaking: 29, Reading: 30, Listening: 30.

### References

Angela Duckworth	Ph.D. in Psychology	<a href="mailto:aduckworth@characterlab.org">aduckworth@characterlab.org</a>
Lennia Matos	Ph.D. in Psychology	<a href="mailto:lmatosf@pucp.edu.pe">lmatosf@pucp.edu.pe</a>
Sandra Inurritegui.	Ph.D. in Psychology	<a href="mailto:sinurrit@ulima.edu.pe">sinurrit@ulima.edu.pe</a>
Dora Herrera	Ph.D. in Psychology	<a href="mailto:diherrera@pucp.edu.pe">diherrera@pucp.edu.pe</a>