

Hau-Hung Yang, Ph.D.

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 <https://github.com/Hardy1Yang>

 <https://hardy1yang.github.io>

scholar.google.com/citations?user=gUf0kCYAAAAAJ

Area of application: Quantitative Psychology

Education

- Sep. 2022–Jun. 2026  **Ph.D. in Psychology, National Taiwan University, Taipei, Taiwan (R.O.C.).**
Overall GPA: 4.19/4.3
- Sep. 2020–Jun. 2022  **M.S. in Psychology, National Taiwan University, Taipei, Taiwan (R.O.C.).**
Overall GPA: 4.13/4.3
- Sep. 2016–Jun. 2020  **B.S. in Psychology, National Taiwan University, Taipei, Taiwan (R.O.C.).**
Overall GPA: 4.12/4.3

Dissertation

- Title** Precision and Robustness in Adaptive Testing: An Item Response Theory Analysis within an Online Convex Optimization Framework
- Advisor** Prof. Yung-Fong Hsu
- Summary** Develops finite-sample theory and stable item-selection procedures for computerized adaptive testing by connecting item response theory with online convex optimization, confidence sequences, and bandit methods.

Awards

- 2026  **NTU Presidential Award for Graduate Students (臺大研究生校長獎)**, National Taiwan University
The highest research honor for NTU graduate students, awarded for the dissertation “Precision and Robustness in Adaptive Testing: An Item Response Theory Analysis within an Online Convex Optimization Framework”
-  **Professor Chao-ming Cheng Memorial Scholarship**, Department of Psychology, National Taiwan University
Departmental graduate-student award for outstanding research, academic year 2025–2026
-  **Dean’s Award**, College of Science, National Taiwan University
Awarded for outstanding research achievement, academic year 2025–2026

Media Coverage

- Dec. 2025  **The New York Times** — Amanda Taub, “Birthrates Are Falling, but Don’t Blame Dogs in Strollers” (December 18, 2025)
Coverage of Chen, Lin, Yang, and Yen, *Cats, Dogs, and Babies: Quasi-Experimental Evidence on Substitutes or Complements from Linked Administrative Records* (SSRN working paper 5656231)

Media Coverage (continued)

- 📌 **Marginal Revolution** — “Cats, dogs, and babies, in Taiwan”
<https://marginalrevolution.com/marginalrevolution/2025/12/cats-dogs-and-babies-in-taiwan.html>

Employment

- 2026–Present 📌 **Postdoctoral Scholar**, Institute of Statistical Science, Academia Sinica, Taipei, Taiwan.
Government Statistics Research Group. Policy research with Ministry of the Interior administrative data; research question and empirical design in development.
- Jul. 2023–Feb. 2025 📌 **Full-time Research Assistant (R&D Substitute Military Service)**, Department of Economics, National Taiwan University, Taipei, Taiwan.

Research

Journal Articles

- 1 Chen, K.-M., Chen, Y.-C., Hung, C.-C., & **Yang, H.-H.** (2026). Institution or major? Understanding student preferences in college admissions [Accepted, forthcoming]. *Economic Inquiry*.
- 2 Chen, K.-M., Tsai, L.-T., & **Yang, H.-H.** (2026). Labor market sorting in Taiwan. *Taiwan Economic Review*, 54(2), 267–289. 🔗 [https://doi.org/10.6277/TER.202606_54\(2\).0003](https://doi.org/10.6277/TER.202606_54(2).0003)
- 3 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2025). Identifiability of polychoric models with latent elliptical distributions. *Psychometrika*, 90(2), 757–778.
🔗 <https://doi.org/10.1017/psy.2024.25>
- 4 **Yang, H.-H.**, & Hsu, Y.-F. (2024a). The generalized Robbins–Monro process and its application to psychophysical experiments for threshold estimation. *Journal of Mathematical Psychology*, 120–121, 102855. 🔗 <https://doi.org/10.1016/j.jmp.2024.102855>
- 5 **Yang, H.-H.**, & Hsu, Y.-F. (2024b). A note on the application of stochastic approximation to computerized adaptive testing. *Behaviormetrika*, 51(1), 259–276.
🔗 <https://doi.org/10.1007/s41237-023-00215-0>

Manuscripts under Review or Revision

- 1 Chang, W.-C., **Yang, H.-H.**, Lin, T.-Y., Tong, J. C. H., & Hsu, Y.-F. (2025). *Comparison of bisection-based and adaptive psychophysical methods for eliciting indifference points in loss aversion research* [Under revision].
- 2 **Yang, H.-H.**, Ho, T.-Y., & Hsu, Y.-F. (2025). *Enhancing Random Forest performance on imbalanced data using the General Condorcet Model* [Minor revision].
- 3 **Yang, H.-H.**, Wei, C.-M., & Chen, Y.-C. (2025). *On the consistency of Bayesian adaptive testing under the Rasch model* [Under revision; arXiv preprint].
🔗 <https://arxiv.org/abs/2412.07170>

Working Papers

- 1 Chen, K.-M., Lin, M.-J., **Yang, H.-H.**, & Yen, S. Y.-H. (2025, October). *Cats, dogs, and babies: Quasi-experimental evidence on substitutes or complements from linked administrative records* [SSRN working paper].
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5656231
- 2 **Yang, H.-H.**, Hsu, Y.-F., & Cheng, C. (2025, March). *Parametric bootstrapping of standard errors for the ability parameter in IRT models: Asymptotic and small sample analyses* [PsyArXiv preprint]. <https://doi.org/10.31234/osf.io/697yj>
- 3 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2024). *On the existence and uniqueness of MLE of the latent trait under log-concave distributional assumptions in IRT* [PsyArXiv preprint].
<https://doi.org/10.31234/osf.io/j25zw>
- 4 **Yang, H.-H.**, & Hsu, Y.-F. (2024). *Applying a heterogeneous random utility model to data from conjoint experiments* [PsyArXiv preprint].
<https://doi.org/10.31234/osf.io/ytfx2>
- 5 Tong, J. C. H., **Yang, H.-H.**, & Chen, Y.-P. (2022). *Decision-making process of retail investors during a financial bubble: An fMRI study* [Working paper].

Conference Presentations

- 1 Cheng, C., **Yang, H.-H.**, Hsu, Y.-F., & Lay, K.-L. (2026). *Validity evidence for the joint Thurstonian models* [Oral presentation]. International Meeting of the Psychometric Society (IMPS) 2026, Seoul, South Korea.
<https://www.psychometricsociety.org/annual-meeting/>
- 2 **Yang, H.-H.**, Hsu, Y.-F., & Cheng, C. (2026). *Finite-sample evaluation of computerized adaptive testing* [Poster presentation]. International Meeting of the Psychometric Society (IMPS) 2026, Seoul, South Korea.
<https://www.psychometricsociety.org/annual-meeting/>
- 3 Cheng, C., Lay, K.-L., **Yang, H.-H.**, & Hsu, Y.-F. (2025). *A methodology for addressing the biases resulted in ipsative placement of Q-sort items* [Poster presentation]. SRCD 2025 Biennial Meeting, Minneapolis, MN, USA.
<https://www.srcd.org/event/srcd-2025-biennial-meeting/>
- 4 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2025a). *The universal Cramér–Rao lower bound: A genuine efficiency criterion for both biased and unbiased estimators* [Oral presentation]. 64th Annual Convention of the Taiwanese Psychological Association, Tainan, Taiwan.
- 5 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2025b). *When the test information curve misleads: Exact bias, SE, and RMSE curves in item response theory* [Oral presentation]. The 53rd Annual Meeting of the Behaviormetric Society, Kanagawa, Japan.
<https://conference.wdc-jp.com/bms/2025/index.html/>
- 6 Cheng, C., **Yang, H.-H.**, Hsu, Y.-F., & Lay, K.-L. (2025). *Paradigmatic decisions for measuring choices and preferences: Likert scales, comparative judgments, or combined models? Using academic attribution as an example* [Poster presentation]. The 89th Annual Convention of the Japanese Psychological Association, Sendai, Japan.
<https://pub.conf.it.atlas.jp/ja/event/jpa2025/>
- 7 **Yang, H.-H.**, Wei, C.-M., & Chen, Y.-C. (2025). *On the consistency of Bayesian adaptive testing under the Rasch model* [Oral presentation]. 8th International Conference on Econometrics and Statistics (EcoSta) 2025, Tokyo, Japan.
<https://www.cmstatistics.org/EcoSta2025/>
- 8 Chen, K.-M., Chen, Y.-C., Hung, C.-C., & **Yang, H.-H.** (2024a). *Estimating preferences for college programs using Taiwanese college-admission data* [Oral presentation]. 18th International Symposium on Econometric Theory and Applications (SETA), Taipei, Taiwan. <https://www.econ.sinica.edu.tw/seta2024>
- 9 Chen, K.-M., Chen, Y.-C., Hung, C.-C., & **Yang, H.-H.** (2024b). *Estimating preferences for college programs using Taiwanese college-admission data* [Oral presentation]. Annual Conference of the Population Association of Taiwan, Taipei, Taiwan.
- 10 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2024a). *On the existence and uniqueness of polychoric correlations* [Poster presentation]. 88th Annual Convention of the Japanese Psychological Association, Kumamoto, Japan.
<https://pub.conf.it.atlas.jp/ja/event/jpa2024/>
- 11 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2024b). *On the existence, uniqueness, and finiteness of MLE of the ability in IRT* [Poster presentation]. International Meeting of the Psychometric Society (IMPS) 2024, Prague, Czech Republic.
<https://www.psychometricsociety.org/annual-meeting/>
- 12 Cheng, C., **Yang, H.-H.**, Hsu, Y.-F., & Lay, K.-L. (2024). *Two are better than one: Incorporating Likert scale and comparative judgment data in joint Thurstonian models* [Oral

presentation]. 63rd Annual Meeting of the Taiwanese Psychological Association, Taipei, Taiwan. <https://www.tpa-tw.org/2024main/>

- 13 Cheng, C., **Yang, H.-H.**, Lay, K.-L., & Hsu, Y.-F. (2024). *Predetermined R^2 : An index of later development determined by the past* [Poster presentation]. 27th Biennial Meeting of the International Society for the Study of Behavioural Development (ISSBD), Lisbon, Portugal. <https://issbd.org/events/27th-biennial-meeting/>
- 14 Chen, K.-M., Chen, Y.-C., Hung, C.-C., & **Yang, H.-H.** (2023). *College and major preference estimation using Taiwanese college-admission data* [Oral presentation]. Asian and Australasian Society of Labour Economics Conference (AASLE) 2023, Taipei, Taiwan. <https://www.aasle.org/taipei-conference-info>
- 15 Cheng, C., **Yang, H.-H.**, & Hsu, Y.-F. (2023). *Identifiability of polychoric models with latent elliptical distributions* [Oral presentation]. International Meeting of the Psychometric Society (IMPS) 2023, College Park, MD, USA. <https://www.psychometricsociety.org/annual-meeting/>
- 16 **Yang, H.-H.**, Cheng, C., & Hsu, Y.-F. (2023). *Estimates of standard errors and confidence intervals for the ability parameter in the 2PL model with fast and exact parametric bootstrap* [Poster presentation]. International Meeting of the Psychometric Society (IMPS) 2023, College Park, MD, USA. <https://www.psychometricsociety.org/annual-meeting/>
- 17 **Yang, H.-H.**, & Hsu, Y.-F. (2023). *On the consistency and relative efficiency of a generalized Robbins–Monro process for threshold estimation* [Poster presentation]. Annual Meeting of the Society for Mathematical Psychology, Amsterdam, Netherlands. <https://mathpsych.org/conference/12/>
- 18 **Yang, H.-H.**, & Hsu, Y.-F. (2021). *Modification of the estimation method of threshold: A new adaptive method taking response time and response confidence into account* [Oral presentation]. 2021 Annual Meeting of the Taiwanese Psychological Association, Taipei, Taiwan.

Invited Talks

- 1 **Yang, H.-H.** (2026). *Invited departmental seminar (title to be announced)* [Invited talk, scheduled]. Department of Statistics and Data Science, National Cheng Kung University, Tainan, Taiwan.

Grant

- 1 **Yang, H.-H.** (2026, July 20–24). *Grant for Graduate Students to Attend International Academic Conferences* (NSTC No. 115-2922-I-002-376) [International Meeting of the Psychometric Society (IMPS) 2026, Seoul, South Korea]. National Science and Technology Council, Taiwan.
- 2 **Yang, H.-H.** (2025, August 1–2026, July 31). *NSTC Doctoral Research Scholarship* [Awarded through National Taiwan University]. National Science and Technology Council, Taiwan.
- 3 **Yang, H.-H.** (2023, July 24–28). *Grant for Graduate Students to Attend International Academic Conferences* (NSTC No. 112-2922-I-002-355) [International Meeting of the Psychometric Society (IMPS) 2023, College Park, MD, USA]. National Science and Technology Council, Taiwan.
- 4 **Yang, H.-H.**, & Hsu, Y.-F. (2019, July 1–2020, February 28). *資訊揭露成本對於不確定情境下選擇行為的影響* (MOST. No. 108-2813-C-002-115-H) [College Student Research Scholarship]. Ministry of Science and Technology, Taiwan.

Selected Research Collaborations

- Aug. 2024–Aug. 2026  **Finite-Sample Inference for Computerized Adaptive Testing**
Research collaboration; *Prof. Yung-Fong Hsu*
Developed adaptive-testing algorithms, implemented simulation studies, and contributed to the accompanying manuscripts.
- Jul. 2022–Aug. 2026  **Applied Economics with Administrative Data**
Research collaboration; *Prof. Kuan-Ming Chen*
Worked on labor-market sorting, college choice, and household formation using administrative records. Contributions include data construction, model estimation, results analysis, and manuscript revision.
- Jun. 2022–Dec. 2025  **Evaluation of an Online Education Program**
Research collaboration; *Prof. Yu-Chang Chen*
Applied item response models and Bayesian estimation to ability measurement on the PaGamO learning platform; implemented and evaluated the estimation algorithms.
- Sep. 2017–Jan. 2023  **Behavioral and Neuroeconomic Studies of Decision Making**
Research collaboration; *Profs. Yung-Fong Hsu and Yu-Ping Chen*
Analyzed behavioral and fMRI data from studies of risky choice and financial bubbles, and helped estimate utility-function parameters.

Teaching

Workshop Instructor

- Sep. 21, 2026 Co-instructor (with Prof. Yu-Chang Chen), **Workshop on AI Applications in Teaching** (Session 2), Taiwan Economic Association, co-hosted by the Departments of Public Finance and Economics, National Chengchi University. Three-hour session for university instructors in economics and related fields (capped at 40).
- Aug. 24, 2026 Co-instructor (with Prof. Yu-Chang Chen), **Workshop on AI Applications in Teaching** (Session 1), Taiwan Economic Association, co-hosted by the College of Social Sciences, National Taiwan University. Full-day workshop for university instructors in economics and related fields (capped at 40): language-model fundamentals, building a course-specific AI teaching assistant, and specification-driven development of teaching materials.

In total, approximately 70 participants across the two sessions: faculty from universities across Taiwan and postdoctoral researchers from Academia Sinica.

Teaching Assistant (National Taiwan University)

- Fall 2024 PSY7001: **Experimental Design**
- Spring 2023 PSY5033: **Applied Linear Regression**
- Fall 2022 PSY7001: **Experimental Design**
- Fall 2021 PSY3010: **Intermediate Statistics**
- Spring 2021 PSY1004: **Statistics in Psychology and Education II**
- Fall 2020 PSY1003: **Statistics in Psychology and Education I**
- Spring 2020 PSY1004: **Statistics in Psychology and Education II**
- Fall 2019 PSY1003: **Statistics in Psychology and Education I**

Skills

Programming	■	R (primary), Python, MATLAB, Stata, SAS, $\LaTeX$
Statistical methods	■	Regression and generalized linear models, factor analysis, structural equation modeling, simulation
Psychometrics	■	Item response theory, computerized adaptive testing, stochastic approximation, online learning
Applied research	■	Large-scale administrative data: Ministry of Finance income-tax records, Ministry of Education college-admission records, Council of Agriculture pet-registration records, and Ministry of the Interior administrative data (current); record linkage, reproducible analysis pipelines, fMRI preprocessing and analysis
Software	■	clt-interactive-course (interactive Central Limit Theorem teaching tool); Generalized_RM_supplementary (R code for the generalized Robbins–Monro paper); RF-GCM-Public (random forest aggregation with the General Condorcet Model); eduspec-sdd-template (specification-driven course-material template)