

Ashley Yue Mao

Quantitative Researcher | Psychometrician | Data Analyst

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PROFILE

PhD-trained quantitative researcher and data analyst specializing in measurement, evaluation, psychometrics, survey research, health/education analytics, and AI/model-output evaluation. 5+ years of experience translating complex human-data questions into rigorous study designs, statistical models, data-quality workflows, dashboards/reporting logic, publications, and stakeholder-ready recommendations. Strong in R, Python, SQL, SPSS, Excel, regression/ANOVA/SEM, evidence synthesis, data storytelling, and clear communication with technical and non-technical audiences.

CORE EXPERTISE

Measurement & psychometrics: Assessment design, item/scale diagnostics, scoring logic, reliability/validity evidence, argument-based validation.

Analytics & modeling: Data cleaning, validation, reproducible workflows, regression, ANOVA, SEM/path analysis, multivariate analysis.

AI and data quality: LLM output evaluation, QA rubrics, systematic error analysis, documentation, human-in-the-loop review consistency.

Research & evaluation: Survey design, evidence synthesis, evaluation frameworks, performance indicators, missing-data/bias/uncertainty review.

Health, education & workforce data: Mental-health, workplace, learner, clinical, and survey datasets; stakeholder reporting and recommendations.

Data storytelling & BI: KPI logic, metric definitions, dashboards, executive-ready reports, Power BI prototype and public R Shiny dashboard.

EDUCATION

University of British Columbia (UBC) - Vancouver, BC | PhD, Measurement, Evaluation, & Research Methodology | Sept. 2019 - May 2026

Zhejiang University - Hangzhou, China | MA, Curriculum and Teaching | Sept. 2017 - June 2019

Zhejiang University - Hangzhou, China | BA, Education | Sept. 2013 - June 2017

AI Programming with Python | Udacity Nanodegree (Bertelsmann Scholar) | Dec. 2023 - May 2024

Programming for Data Science with Python | Udacity Nanodegree (Bertelsmann Scholar) | Dec. 2022 - April 2023

SELECTED EXPERIENCE

A&E Data Inc. - Edmonton, AB | Owner | Sept. 2025 - Present (casual)

- Lead AI data-quality evaluation projects, maintaining structured review criteria, workflow documentation, issue-resolution notes, quality controls, and reviewer guidance.
- Evaluate model outputs and reviewer decisions to identify hallucinations, systematic errors, edge cases, ambiguity, and recurring quality gaps in responsible AI workflows.

Institute for the Scholarship of Teaching and Learning, UBC - Vancouver, BC | Learning Specialist | July 2020 - Aug. 2025 (part-time)

- Led end-to-end assessment, survey, and learning-analytics projects from stakeholder question framing through data collection, cleaning, analysis, reporting, and recommendations.
- Partnered with faculty and administrators to define success metrics, assessment tools, reporting rules, interpretation guidance, and practical improvement actions.
- Built a Power BI prototype and public R Shiny learning-analytics dashboard demonstrating KPI design, interactive filters, data tables, and stakeholder-facing data storytelling.

Research Commons, UBC Library - Vancouver, BC | Assistant for Statistical Analysis and Data Visualization | Sept. 2022 - Aug. 2023 (part-time)

- Advised researchers on study design, data preparation, reproducible workflows, statistical analysis, visualization, and interpretation using R, Python, and SPSS.
- Delivered workshops and consultations that improved data literacy, method selection, metric interpretation, and responsible use of quantitative evidence across disciplines.

School of Nursing, UBC - Vancouver, BC | Assistant for Survey Data Analysis | Feb. 2021 - July 2022 (part-time)

- Cleaned, validated, and analyzed large-scale workplace and mental-health survey datasets using R; produced regression- and ANOVA-based findings for leadership reporting during COVID-19.
- Assessed subgroup patterns, limitations, and factors associated with mental-health support needs; translated findings into practical reporting and recommendations.

Fairbrother Laboratory, Dept. of Family Practice, Faculty of Medicine, UBC - Vancouver, BC | Statistician | Dec. 2023 - Dec. 2024 (part-time)

- Designed and validated statistical models for maternal mental-health research using clinical and survey data, including SEM/path analysis, diagnostics, construct operationalization, and publication-ready outputs.
- Communicated assumptions, model fit, limitations, and implications clearly to interdisciplinary clinical and research collaborators handling sensitive human-subject data.

Dept. of Educational and Counselling Psychology, and Special Education, UBC - Vancouver, BC | Research Assistant | May 2023 - Mar. 2026 (part-time)

- Developed quantitative methods to synthesize risk-of-bias outcomes and supported protocol development, evidence synthesis, quality assessment, and transparent documentation for public-health guidance research.
- Applied psychometric and research-methods judgment to data-quality review, study-design documentation, validity considerations, and reproducible analytical reasoning.

Dept. of Educational and Counselling Psychology, and Special Education, UBC - Vancouver, BC | Research Methodology Support | Sept. 2021 - May 2022 (part-time)

- Consulted on research design, psychometric modeling, survey analysis, item/scale interpretation, and quantitative-method selection for students and researchers.

SELECTED PROJECTS

- **Learning Analytics Dashboard - Power BI Prototype & R Shiny Public App:** designed a synthetic education analytics dashboard demonstrating KPI cards, interactive filters, subgroup comparisons, assessment-performance views, searchable data tables, and public-facing data storytelling. [Project post](#)
- **AI model-output evaluation workflows:** developed structured review logic, error taxonomies, quality notes, and reviewer guidance to improve consistency, documentation, and responsible use of AI outputs.

SELECTED PUBLICATIONS

- Wu, S., Mao, Y., Stone, J., & Wu, A. D. (2025). An implementation of argument-based validation for assessing college major preferences with a hybrid of Likert-rating and forced-choice formats. *Assessment in Education: Principles, Policy & Practice*. <https://doi.org/10.1080/0969594X.2025.2591284>
- Fairbrother N., Keeney C., Mao Y., Beck Q. (2025). The relationship of childhood maltreatment, adult sexual victimization, depressed mood and symptoms of trauma with fear of childbirth. *Journal of Affective Disorders*, 369, 265-275. <https://doi.org/10.1016/j.jad.2024.09.144>
- Gu K., Shang R., Jiang R., Kuang K., Lin R., Lyu D., Mao Y., Pan Y., Wu T., Yu J., Zhang Y., Zhang T., Zhu L., Merrill M., Heer J., Althoff T. (2024). BLADE: Benchmarking Language Model Agents for Data-Driven Science. *arXiv*. <https://arxiv.org/abs/2408.09667>
- Chen, G., Liu, Y., & Mao, Y. (2024). Understanding the Log File Data from Educational and Psychological Computer-Based Testing: A Scoping Review Protocol. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0304109>
- Havaei F., MacPhee M., Ma A., Mao Y. (2022). Priority nursing populations for mental health support before and during COVID-19: A survey study of individual and workplace characteristics. *Canadian Journal of Nursing Research*. <https://doi.org/10.1177/08445621221098833>
- Mao, Y., Ye, Y. (2021). Specific antecedents of entrepreneurial intention among newly returned Chinese international students. *Frontiers in Psychology*, 12, 1-12. <https://doi.org/10.3389/fpsyg.2021.622276>

METHODS & TOOLS

Methods: psychometrics, assessment design, survey/item development, scoring logic, item/scale diagnostics, reliability and validity evidence, CTT-informed analysis, MIRT-informed validation, SEM/path analysis, regression, ANOVA, multivariate analysis, model diagnostics, evaluation, evidence synthesis, data cleaning/validation, data-quality checks, AI/model-output evaluation, knowledge translation, stakeholder facilitation, executive-ready storytelling, and documentation.

Tools: R, Python, SQL, SPSS, Excel, Mplus, AMOS, Jupyter, R Markdown, GitHub, VS Code, Word, PowerPoint, Outlook; Power BI prototype and public R Shiny dashboard.

Languages: English and Mandarin Chinese.