Curriculum Vitae

Yi-Ling Cheng 鄭怡玲

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Research interest: Bias Estimations in Educational and Psychological Measurement. Computerized Testing and Training, Applications of Artificial Intelligence in Measurement, STEM education. Cognitive/Educational training

Education

	Dual Major[1]
2012-2016 Ph.D	Measurement and Quantitative Methods
2018-2016	Educational Psychology and Educational Technology
2010-2016.	Graduate Specialization in Cognitive Science
	Michigan State University

Footnote: 1. Dual Major Doctoral Degree at MSU: All the program requirements (e.g., preliminary exams, practicums and comprehensive exams) must be satisfactory to both programs. There must be a single dissertation that integrates both disciplinary areas. Please see the link: https://grad.msu.edu/interdisciplinaryprograms for more information

Employment

2024.08-present	Assistant Professor, National Sun Yat-sen University, Taiwan
2024.02-2024.07	Associate Professor, Kaohsiung Medical University, Taiwan
2019.08-2024.01	Assistant Professor, Kaohsiung Medical University, Taiwan
2019.05-2020.12	Psychometrician, Hannah Chair Department, Michigan State University
2016.08-2019.05	Assistant Professor (fixed term), Michigan State University Teacher Education 150 program assistant coordinator (Fall 2018-Spring 2019) Statistical Consultant for doctoral students

Grants/Fellowships

2023-2025	The Gender differences across ASD, spatial abilities, and STEM Performances: An exploration of Gender bias on Autistic Trait Assessments with Math/Science Gifted Students ($44,333USD, National Science and Technology Council 112-2629-H-037-001-SS2, 2023/08-2025/07)
2022-2024	*Gender Similarity and Difference on Science performance Test*- Analysis of Response Patterns on TIMSS data and Exploration of the Effect of Adaptive Spatial Training ($46,566 USD, *Ministry of Science and Technology* 111-2410-H-037-004-MY2, 2022/08-2024/07)
2020-2021	The Effect of Attribute-by-Item Matrix on Model Selections and its Applications of Artificial Intelligence to Test Development, Ministry of Science and Technology, Taiwan($24,000 USD, *Ministry of Science and Technology* 109-2410-H-037-019, 2020/10-2022/03) MQM, Dissertation Completion Fellowship, Michigan State University ($6000)
2015	*"The Dimensionality of Cognitive Structure"*
2014	Summer Research Fellowship, Michigan State University. ($3000)
2011	Research Enhancement Fellowship, Michigan State University. ($1000)

2011, 2012	Summer Research Renewable Fellowship, College of Education, Michigan State University. ($12000) *"How Are Space and Mathematics Connected?"*
2010	Summer Research Fellowship, College of Education, Michigan State University. ($6000) *"Does Spatial Training Improve Children's Mathematics Ability?"*

Publications

Peer-Reviewed Journals

Cheng, Y-L.Chien, I-C, Schneider, B., Reckase. M. D., & Krajcik, J. (2024). Gender Differences and Similarities in High School Science Performance—What Do Item Response Patterns Tell Us? *Applied Measurement in Education.* 1-24. *(SSCI, impact factor: 1.7, Q2)*

Cheng, Y-L. (2023). Concerto Software for Computerized Adaptive Testing–Free Version. *Measurement: Interdisciplinary Research and Perspectives*, *21*(3), 194-202. *(ESCI, impact factor: 1, Q2, 111/265, Social Science, Interdisciplinary).*

Cheng, Y- L., Iao, L. S., & Wu, C. C. (2021). Comparison of the Factor Structure of the Child Behavior Checklist 1.5–5 between Children with ASD and Children with DD. *Research in Autism Spectrum Disorders*, *89*, 101867. *(SSCI, impact factor: 2.5, Q1, 62/264, Psychiatry)*

Mix, K. S., Levine, S. C., **Cheng, Y. L**., Stockton, J. D., & Bower, C. (2021). Effects of spatial training on mathematics in first and sixth grade children. *Journal of Educational Psychology*, *113*(2), 304. *(SSCI, impact factor:4.9, Q1, 4/73, Psychology, Educational).*

Mix, K. S., Levine, S. C., **Cheng, Y-L**., Young, C. J., Hambrick, D. Z., & Konstantopoulos, S. (2017). The Latent Structure of Spatial Skills and Mathematics: A Replication of the Two-Factor Model. *Journal of Cognition and Development*, *18*(4), 465-492.

Mix, K. S., Smith, L. B., Stockton, J. D., **Cheng, Y- L**., & Barterian, J. A. (2017). Grounding the Symbols for Place Value: Evidence from Training and Long-Term Exposure to Base-10 Models. *Journal of Cognition and Development*, *18*(1), 129-151.

Mix, K. S., Levine, S. C., **Cheng, Y-L.,** Young, C., Konstantopolous, K., Hambrick, Z., & Ping, R. (2016). Separate but correlated: The latent structure of space and mathematics across development. *Journal of Experimental Psychology: General, 145*(9), 1206.

Cheng, Y-L. & Mix, K. S. (2014). Spatial training improves children's mathematics ability. *Journal of Cognition and Development, 15*(1), 2-11**.**
(The article was featured as one of the most downloaded articles published in the Routledge Behavioral Sciences journals in 2014)

Cheng, Y-L., Kim, K. H., & Hull, M. F. (2010). An Examination of the Relationship between Creative Potential and Personality Types among American and Taiwanese College Students of Teacher Education. *Psychology of Aesthetics, Creativity, and the Arts. 4,*103-112.

Book Chapters

Cheng, Y-L (2017). The improvement of spatial ability and its relation to spatial training. In M.S. Khine (Ed.). *Visual-spatial Ability in STEM Education: Transforming Research into Practice*. (pp. 143-172). Springer International Publishing.

Mix, K. S., & **Cheng, Y. L.** (2012). The relation between space and math: Developmental and educational implications. In J. B. Benson (Ed.). *Advances in child development and behavior* (vol. 42, pp. 197–243). Burlington, VT: Academic Press.

Open Access Publications

Cheng, Y-L., Wu, Y. R., Lin, K. D., Lin, C. H. R., & Lin, I. M. (2023). Using Machine Learning for the Risk Factors Classification of Glycemic Control in Type 2 Diabetes Mellitus. In *Healthcare* Vol. 11, No. 8, p. 1141. (*(SSCI, impact factor: 2.8, Q2, 38/116, Health policy & Services)*

Cheng, Y-L., Chu, C.L.& Wu, C. C. (2022). How do Children with ASD and Children with DD differ on the Child Behavior Checklist 1.5–5 DSM oriented scales? The perspective from factor structure and differential item functioning. *Children, 9 (*1*), 111. (SCIE, impact factor: 2.4, Q2, 52/185, pediatrics)*

Conference/Invited Presentations(* student author)

Cheng, Y-L & Reckase. M. D. Comparing Genetic Algorithms and NIRT for Autism Screening Gender Bias . Presentation accepted by the 2024 National Council on Measurement in Education.

Cheng, Y-L & Reckase. M. D (2023) How Many Items Do We Need for 90% Screening Accuracy with Machine Learning? Presentation accepted by the National Council on Measurement in Education, Chicago, April 10-15.

Cho, Y-J* & **Cheng, Y-L** (2023, April 13-16) What can predict Math achievement? - from the worldview of Machine learning. Presentation accepted by the American Educational Research Association Annual meeting, Chicago, United States.

Cheng, Y-L & Reckase. M. D (2022) A Comparison between Computerized Adaptive Testing and Decision Tree with Computerized Adaptive Training-Testing Program. Presentation accepted by the National Council on Measurement in Education, San Diego, April 21-24.

Cheng, Y-L (2021, June) The Comparison between IRT Models and Genetic Algorithms on Abbreviating Cognitive Tests. Presentation accepted by the National Council on Measurement in Education, online, June 08-11.

Cheng, Y-L., Reckase. M. D., & Schneider, B (2020, April). The Design of Q matrix for Multidimensional Diagnostic Models. Presentation accepted by the National Council on Measurement in Education, San Francisco, CA, April 17-21.

Cheng, Y-L., Schneider, B., Reckase. M. D., & Krajcik, J. (2020, April). The Effect of Gender Differences and Similarities on Science Performance. Presentation accepted by the American Educational Research Association, San Francisco, CA, April 17-21.

Cheng, Y-L. (2018, October). How Does Classroom Learning Impact Large-scale Achievement Testing? —a Differential Distractor Functioning Approach. Poster Presentation accepted by the National Council on Measurement in Education: Classroom Assessment, University of Kansas, KS, October 8-10.

Cheng, Y-L., Reckase. M. D., & Satyam, R. V. (2018, April). Categorical or Dimensional Models for Cognitive Processes. Individual Paper Presentation accepted by the National Council on Measurement in Education, New York, NY, April 12-16.
Cheng, Y-L & Satyam, R. V. (2018, April). Application of Neurocognitive Model to TIMSS 2011: The Structure of Mathematics Processing in Fourth Grade. Individual Paper Presentation accepted by the American Educational Research Association, New York, NY, April 13-17.
Cheng, Y-L (2018, April). Multidimensional Item Response Analyses of Cognitive Structure – An Interdisciplinary Approach. Invited presentation at North Carolina State University
Mix, K. S., Levine, S. C., **Cheng, Y-L**. (2017, October) Effects of Spatial Training on Elementary Mathematics**.** Symposium accepted at the Biennial meeting of Cognitive Development Society, Portland, OR, October 13–14, 2017

Cheng, Y-L., Mix, K. S., Reckase. M. D., Levine, S. C., Freer, D. (2017, October). The Dimensionality between Visuo-Spatial Working Memory and Calculation Ability. Poster accepted at the Biennial meeting of Cognitive Development Society, Portland, OR, October 13–14, 2017.
Cheng, Y-L., & Reckase. M. D. (2017, April). Can Subscores be Detected when the Data Fit Unidimensional Models? Paper accepted by the National Council on Measurement in Education, Individual Presentation, San Antonio, TX, April 26– 30, 2017.
Cheng, Y-L., & Reckase, M. D. (2015, April). Are Subscores Worth Reporting when Test Data can be Represented by a Unidimensional Model? Poster presented at the Annual meeting of the American Educational Research Association, Division D: Measurement & Research Methodology, in progress research Gala, Chicago, IL, April 16–19, 2015.
Mix, K. S., Levine, S. C., **Cheng, Y-L.,** Young, C. (2015, March). The Relations between Space and Math: An Exploratory Factor Analysis. Paper (Symposium) presented at the Biennial meeting of the Society for Research in Child Development, Philadelphia, PA, March 19–21, 2015.
Cheng, Y-L., Reckase, M. D., Mix, K. S., Cook, E., & Levine, S. C. (2014, April). The Use of Cognitive Diagnostic Models with a Hierarchical Structure. Poster presented at the National Council on Measurement in Education Graduate Student Research Session, Philadelphia, PA, March 19– 21, 2015.
He, J. & **Cheng, Y-L**. (2014, April). Does Computer Experience Affect Children's Geometry Ability? Using Hierarchical Linear Modeling on the TIMSS 2011 Mathematics Data. Poster presented at the Research Conference of the National Council of Teachers of Mathematics, New Orleans, LA.
Cheng, Y-L., Mix, K. S., Levine, S. C. Berkowitz, T. Young, C., & Ping, R. (2013, October). The Relations between Space and Math: A MIMIC Model Approach. Poster presented at the Biennial meeting of Cognitive Development Society, Memphis, TN, October 18–19, 2013.
Cheng, Y-L., & Mix, K. S. (2011, October). How are space and mathematics connected? Poster presented at the Biennial meeting of the Cognitive Development Society, Philadelphia, PA, October 14 –15, 2011.
Cheng, Y-L., & Mix, K. S. (2011, September). Does spatial training improve children's mathematics ability? Poster presented at the Fall 2011 Conference of the Society for Research on Educational Effectiveness, Washington, DC, September 8–10, 2011.
Cheng, Y-L., & Mix, K. S. (2010, November). Does mental rotation training increase children's mathematics ability? Presentation given at the Human Development Initiative Brown Bag, Michigan State University
Cheng, Y-L., & Kim, K. H. (2010, August). The relationship between creative styles and academic achievements. Paper presented at the 118th Convention of the American Psychological Association in San Diego, CA, August 12–15, 2010.
Cheng, Y-L., & Kim, K. H. (2007, August). The relationship between personality types and creativity in Americans and Taiwanese. Paper presented at the 115th Convention of the American Psychological Association in San Francisco, CA, August 17–20, 2007.

Professional Services

Consulting Editorial Board: Journal of Educational Psychology (from 2023.10-present, *SSCI, impact factor:4.9, Q1, 4/73, Psychology, Educational*)

Journal Principal Reviewer: Journal of Educational Psychology (2022.10-2023.10)

Grant Reviewer: Social Sciences and Humanities Research Council, Canada.

Ad Hoc Journal Reviewer: Educational Psychology(7), Applied Cognitive Psychology(1),Mathematical Thinking (3), Research in Autism Spectrum Disorders(3), Journal of Educational Assessment, Educational Evaluation and Policy Analysis (EEPA). Journal of Cognitive Development (JCD). Learning and Instruction(3). Journal of Early Childhood Teacher Education. Journal of Cognitive Psychology. Journal of Educational Measurement, Eurasia Journal of Mathematics, Science and Technology Education(2). Journal of Numerical Cognition. Developmental

Science. Behavior Research Methods. Child Development. Developmental Psychology. American Educational Research Journal 數位學習科技期刊, 測驗期刊

Conference Reviewer: National Council on Measurement in Education(2024-2016), Graduate Student Research Session (2014/2021)/Coordinated and Individual Submission (2016,2019-2022). Annual Conference of the National Association for Gifted Children (2012/2013). Cognitive Development Society (2017)

Teaching

2023-2024Teaching

EMI 2024F	Instructor: Applied Statistics and Data Analysis (master level)
2022F-2023F	Instructor: Introduction for Statistical software packages (undergraduate level) (2023 Average of student evaluation: 5.3, 6 is the highest score, 20 students)
非 **EMI** 2024S-2024F	Instructor: 人工智慧在測驗下的應用與發展(碩班) (2024S Average of student evaluation: 6, 6 is the highest score, 3students 高醫大)