Curriculum Vitae

Ying ("Alison") Cheng

H-Index: 28 Citations: 2260

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Higher Education

University of Illinois at Urbana-Champaign	Ph.D. in Quantitative Psychology	2008
University of Illinois at Urbana-Champaign	M.S. in Statistics	2007
University of Science and Technology of China	B.A & B.E.	2003

Academic Appointments

2021 – present Associate Director, Lucy Family Institute for Data and Society, University of Notre Dame

2020 – present Professor, Department of Psychology, University of Notre Dame

2017 – 2019 Program Director, Quantitative Psychology area, University of Notre Dame

2014 – 2020 Associate Professor, Department of Psychology, University of Notre Dame

2012 – present Fellow, Institute for Educational Initiatives, University of Notre Dame

2008 – 2014 Assistant Professor, Department of Psychology, University of Notre Dame

Professional Appointments

2023 – present Secretary, *Psychometric Society*

2021 – present Member, Board of Trustees, *Psychometric Society*

2019 – present Chief Editor, *British Journal of Mathematical and Statistical Psychology.*

2019 – present Member, Editorial Advisory Group, *The British Psychological Society.*

2019 – present Member, Technical Advisory Committee, *National Council for State Boards of Nursing.*

2019 – present Editorial Board member, *Chinese/English Journal of Educational Measurement and Evaluation.*

2018 – present Member, Board of Examiners, *American Institute of Certified Public Accountants*.

2014 – present Member, Psychometric Oversight Committee, *American Institute of CPAs*.

2016 – present Member, Technical Advisory Board of GRE, *Educational Testing Service*.

2016 – 2018 Editorial Board member, *Psychological Test and Assessment Modeling*

2017 – 2018 Chair of Editorial Council, *Psychometric Society*.

2016 – 2017 Member, Editorial Council, *Psychometric Society.*

2015 – 2018 Associate Editor, *American Educational Research Journal.*

2013 – 2018 Associate Editor, *British Journal of Mathematical and Statistical Psychology.*

Awards

2024: Elected Fellow, *American Psychological Association*, Division 5

2023: Best poster award, Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES)

Learning Analytics in Organic Chemistry (with [U]*Thomas Joyce* & [P]*Bo Pei*)

2023: First place, 2023 EDM Cup hosted by International Educational Data Mining Society (IEDMS) on Kaggle

Advanced Knowledge Tracing for Intelligent Tutoring Systems: Incorporating Process Data and Curricula Information via an Attention-Based Framework (with [†]*EK Lu* & [†]*Lingbo Tong*)

2022: Runner up, *1st Source Bank Commercialization Award*

The award annually recognizes Notre Dame and Indiana University School of Medicine South Bend faculty *for exceptional research discoveries and the role they have played in supporting the translation of these discoveries into marketable products and/or services*.

2019: Elected Fellow, *Association for Psychological Science*

Fellow status is awarded to members of APS "whose work has influenced the field of psychological science in important and lasting ways".

2018: Best poster award, *American Educational Research Association Division D* Research Gala (My role: Advisor and co-author)

2017: Elected member, *Society of Multivariate and Experimental Psychology (SMEP)*

SMEP is a small elective society of researchers interested in multivariate quantitative methods and their application to substantive problems in psychology and related fields. Its membership is limited to 65 individuals.

2014: Faculty Early Career Award, *National Science Foundation*

The Faculty Early Career (CAREER) award is the National Science Foundation's most prestigious award in support of junior faculty who exemplify the roles of teachers and scholars through outstanding research, excellence in education, and the integration of education with research.

2014: Best paper award from *European Congress of Methodology*

The paper is entitled "Estimation and Confidence Interval Formation for Reliability Coefficients of Homogeneous Measurement Instruments" (Kelly & Cheng, 2012). The best paper award is a bi-annual award given to the best articled published in this journal in the previous two years.

2014: Best poster award, *American Educational Research Association Division D* Research Gala (My role: Advisor and co-author)

2012: The Jason Millman Promising Scholar Award, *National Council of Measurement in Education*.

The Jason Millman Promising Scholar Award of NCME recognizes a scholar at the early stages of his/her career whose research has the potential to make a major contribution to the applied measurement field.

2009: The Bradley Hanson Award for Contributions to Educational Measurement, *National Council on Measurement in Education*.

The Bradley Hanson Award of NCME recognizes a project from a scholar that promises to make a substantive contribution to the field of educational measurement or the development, instruction or mentoring of new professionals in the field.

2007: List of Teachers Ranked as Excellent by Their Students, *University of Illinois at Urbana-Champaign.*

Summer research internship, *the College Board*

Graduate Student Travel Award ($750), *Applied Psychological Measurement*

2005: Summer research internship, *the ACT*.

2004: Summer research internship, *Harcourt Assessment* (later merged with Pearson)

Books

Cheng, Y., & Chang, H. (Eds). (2014). *Advancing Methodologies to Support Both Summative and Formative Assessments*. Charlotte, NC: Information Age Publishing. ISBN-10:1623965950. ISBN-13: 978-1623965952.

Referred Journal Articles

†: Cheng's Current/Former Graduate Student; U: Undergraduate Student; P: Postdoc
*: Cheng as Corresponding Author.

In progress

1. †Lu, Y., Tong, L., ***Cheng, Y.*** (R&R). Advanced Knowledge Tracing for Intelligent Tutoring Systems: Incorporating Process Data and Curricula Information via an Attention-Based Framework. *Journal of Educational Data Mining.*
2. †Lu, Y., Fowler, J., ***Cheng, Y.*** (R&R). A family of sequential item response models for multiple-choice, multiple-attempt test items. *Psychometrika.*
3. PLe, A. T., POber, T. M., & **Cheng, Y**. (under review). Validation of a procrastination scale: A multimethod-multimodal approach. Translational Issues in Psychological Science.
4. USeksaria, A. Ober, T. M., PLe, A. T., & **Cheng, Y**. (ready to submit). Personality as a predictor of student engagement during the transition from in-person to online instruction amidst COVID-19.
5. †Lu, Y., POber, T. M., & **Cheng, Y.** (in progress). Neighborhood Components Analysis and its application to psychological measurement and process data.
6. POber, T. M., Cheng, Y., Brenner, P., Morse, K., Kakodkar, M., Riberio, B., Zdankus, J., Gonsalves, P., and Curated Pathways to Innovation (Group). (ready to submit). Are Machine Learning Recommendations Associated with Learners' Ratings of Educational Content?: Implications for AI-Driven Personalization.
7. POber, T. M., Duan, Q., Blacklock, C., & **Cheng, Y.** (ready to submit). Student Engagement during COVID-19: A systematic review and meta-analysis.
8. †Duan, Q. & ***Cheng, Y.*** (in progress). Detecting differential item functioning using response time.
9. †Duan, Q. & ***Cheng, Y.*** (in progress). Nonparametric response time estimation for assessing parametric model fit.
10. †Filonczuk, A. & ***Cheng, Y.*** (in progress). Robust estimation of the latent trait in graded response models.
11. †Filonczuk, A. & ***Cheng, Y.*** (in progress). Person fit detection in cognitive diagnostic models.

Published

12. POber, T. M., & ***Cheng, Y.*** (in press). Adapting to Online and Remote Learning: Examining the Educational Assessment Experiences of U.S. College Students Amidst COVID-19. *IEEE Internet Computing.*

13. Kirkland, P., Cheng, Y., Trinter, C., & McNeil, N. (in press). Developing a Validity Argument for a Brief Assessment of Mature Number Sense. *Journal for Research in Mathematics Education.* IF: 4.656.
14. [P]Ober, T. M., Liu, C., & **Cheng, Y.** (2023). Development, validation, and evidence of measurement invariance of a shortened measure of trait test anxiety. *European Journal of Psychological Assessment*. IF: 2.892
15. [P]Ober, T. M., [†]Lu, Y., [U]Blacklock, C. B., Liu, C., & **Cheng, Y.** (2023). Development and validation of a cognitive load measure for general educational settings. *Journal of Psychoeducational Assessment*. https://doi.org/10.1177/07342829231169171
16. Duan, X., [P]Pei, B., Ambrose, A. G., Hershkovitz, A, Cheng, Y., Wang, C. (2023) Towards Transparent and Trustworthy Prediction of Student Learning Achievement by Including Instructors as Co-Designers: A Case Study. *Education and Information Technologies*. IF: 3.666
17. [P]Ober, T. M., **Cheng, Y.**, [†]Carter, M. & Liu, C. (2023). Leveraging Performance and Feedback-seeking Indicators from an Online Platform for Early Prediction of Students' Learning Outcomes. Journal of Computer Assisted Learning. https://doi.org/10.1111/jcal.12870 IF: 5.45.
18. [P]Ober, T. M., [†]Xu, X., [U]Kane, E., [G]Hong, M. R., & **Cheng, Y.** (2023). Classroom-based assessment practices of U.S. college faculty in response to emergency teaching circumstances during the COVID-19 pandemic. *Assessment Update*. doi:10.1002/au.30349 (Preprint: https://psyarxiv.com/kv4ta)
19. Setzer, C., **Cheng, Y.,** & Liu, C. (2023). Classification Accuracy and Consistency of Compensatory Composite Test Scores. *Journal of Educational Measurement.* DOI: 10.1111/jedm.12357
20. [P]Yu, X., & ***Cheng, Y.** (2023). A two-Step method for online item calibration in CD-CAT. *Behavior Research Methods.* doi: 10.3758/s13428-022-02036-7.
21. [†]Hong, M., Carter, M., [U]Kim, C., & ***Cheng, Y.** (2023). Data exclusion in policy survey and questionnaire data: Aberrant responses and missingness. *Policy Insights from the Behavioral and Brain Sciences*, 10(1):11-17.
22. [P]Ober, T. M., **Cheng, Y.,** [U]Coggins, M. R., Urdan, T. Brenner, P., Zdankus, J., Gonsalves, P., Johnson, E., & Curated Pathways to Innovation. (2022). Evaluating longitudinal growth in middle school students' attitudes towards computer programming. *Computer Science Education*. DOI:10.1080/08993408.2022.2134677
23. [P]Ober, T. M., [†]Brodersen, A., [†]Rebouças-Ju, D., [†]Hong, M., Liu, C., & ***Cheng, Y.** (2022). Math Attitudes, engagement, and performance of high school students on high and low-stakes tests of statistics knowledge. *Journal for STEM Education Research, 5,* 402 – 438. DOI: 10.1007/s41979-022-00076-4

24. [P]Ober, T. M., Carter, M. F., [U]Coggins, M. R.*, [U]Filonczuk, A.*, [U]Kim, C.,* [†]Hong, M. R., & **Cheng, Y.** (2022). Adaptation to remote teaching during Spring 2020 amidst COVID-19: Perspectives of AP Statistics teachers. *Computers in the Schools*. https://doi.org/10.1080/07380569.2022.2090764

25. [†]Suzuki, H., [†]Hong, M., [P]Ober, T. M., **Cheng** (2022). Prediction of differential performance between Advanced Placement exam scores and class grades using machine learning. *Frontiers in Education*. DOI: 10.3389/feduc.2022.1007779

26. [†]Shao, C., & ***Cheng, Y.** (2022). Application of change point analysis of response time data to detect test speededness. *Educational and Psychological Measurement*, 82(5), 1031 – 1062.

27. [P]Yu, X., & * **Cheng, Y**. (2022). A comprehensive review and comparison of CUSUM and change-point-analysis methods to detect test speededness. *Multivariate Behavioral Research, 57(1),* 112 – 133.

28. [P]Ober, T. M. & & ***Cheng, Y.** (2022). Are high school students accurate in predicting their AP exam scores? Examining inaccuracy and overconfidence of students' predictions. *Assessment in Education: Principles, Policy and Practice*, *29(1)*, 27-50.

29. [P]Ober, T. M., [U]Coggins, M. R., [†]Rebouças-Ju, D., [U]Suzuki, H., & ***Cheng, Y.** (2021). Effect of teacher support on students' math attitudes: Measurement and moderation of students' background characteristics. *Contemporary Educational Psychology*. https://doi.org/10.1016/j.cedpsych.2021.101988

30. [P]Ober, T. M., [†]Hong, M., [†]Rebouças D., Carter, M., Liu, C. ***Cheng, Y**. (2021). Linking Self-report and Process Data to Performance across Different Assessment Types. *Computers and Education*. https://doi.org/10.1016/j.compedu.2021.104188

31. [†]Hong, M., Lin, L. & * **Cheng, Y**. (2021) Asymptotically Corrected Person Fit Statistics for Multidimensional Constructs. *Psychometrika*, *86,* 464–488.

32. [P]Ober, T., ***Cheng, Y.**, Jacobucci, R., & Whitney, B. (2021). Examining the Factor Structure of the BFI-2 with an Adolescent Sample. *Psychological Assessment*, *33*, 14-28.

33. [†]Hong, M., [†]Reboucas, D., & ***Cheng, Y**. (2021). Robust estimation of the log-normal response time model. *Journal of Educational Measurement, 58*, 262-280.

34. [†]Liu, Y., Liu, H., & **Cheng, Y.** (2020). Classifying non-effortful and effortful individuals with mixture methods using response accuracy and response time simultaneously. *Educational and Psychological Measurement*, *80,* 775-807.

35. [P]Yu, X., & *Cheng, Y. (2020). Data-driven Q-matrix validation using a residual-based statistic in cognitive diagnostic assessment. *British Journal of Mathematical and Statistical Psychology, 73,* 145-179. DOI: 10.1111/bmsp.12191
36. [†]Hong, M., Wilcox, K.T., & **Cheng, Y**. (2020). A constructed response model (abstract). *Multivariate Behavioral Research.*
37. Jean-Pierre, P., **Cheng, Y.,** & Paxton, R. (2020). Item-level psychometrics of a brief self-reported memory problem screening measure in breast cancer survivors. *Acta Oncologica*, *59,* 358 – 364. DOI: 10.1080/0284186X.2019.1687935
38. [†]Hong, M., ***Cheng, Y.**, & Steedle, J. (2020). Comparing insufficient effort responding detection methods: Practical advice and recommendations. *Educational and Psychological Measurement*, *80*, 312 – 345. doi: 10.1177/0013164419865316.
39. Jean-Pierre, [†]Shao, C., Paskett, E., **Cheng, Y.,** Wells, K., Paskett, E., & Fiscella, K. (2020). Patient satisfaction with navigator interpersonal relationship (PSN-I): Item-level psychometrics using IRT analysis. *Supportive Care in Cancer*, *28,* 541 – 550. doi: 10.1007/s00520-019-04833-x.
40. [P]Yu, X., & ***Cheng, Y.** (2019). A change-point analysis procedure based on weighted residuals to detect back random responding. *Psychological Methods*, *24*, 658 – 674. doi: 10.1037/met0000212.
41. [†]Reboucas, D. & ***Cheng, Y.** (2019). Relationship between item characteristics and detection of differential item functioning under the MIMIC Model. *Psychological Test and Assessment Modeling*, 61(2), 227 – 257.
42. Narvaez, D., Wang, L., **Cheng, Y.,** Gleason, T., Woodbury, R., Kurth, A., & Lefever, J. B. (2019). The importance of early life touch for psychosocial and moral development. *Psicologia: Reflexão e Crítica*, *32*. DOI: 10.1186/s41155-019-0129-0
43. Huang, S., Kong, Y., & **Cheng, Y.** (2019). Public images of gifted programs in China: A 38-year analysis of Chinese news reports on gifted education. *Gifted and Talented International*, *33*, 41 – 51. doi: 10.1080/15332276.2019.1609343.
44. Narvaez, D., Woodbury, R., Gleason, T., Kurth, A., **Cheng, Y.,** Wang, L., Deng, L., Gutzwiller-Helfenfinger, E., Christen, M., & Näpflin, C. (2019). Evolved development niche provision: Moral socialization, social maladaptation and social thriving in three countries. *Sage Open*, *9*(2). doi: 10.1177/2158244019840123.

45. †Whitney, B. M., ***Cheng, Y.,** †Brodersen, A. S., & †Hong, M. R. (2019). The Survey of Student Engagement in Statistics: Initial development and validation. *Journal of Psychoeducational Assessment, 37,* 553-565. doi: 10.1177/0734282918769983.
46. †Patton, J., ***Cheng, Y.**, †Hong, M., & Diao, Q. (2019). Detection and treatment of careless responses to improve item parameter estimation. *Journal of Educational and Behavioral Statistics, 44*, 309-341. doi: 10.3102/1076998618825116.
47. Steedle, J. T., †Hong, M., & **Cheng, Y.** (2019). The effects of inattentive responding on validity evidence when measuring social-emotional learning competencies. *Educational Measurement: Issues and Practices, 38,* 101-111. doi: 10.1111/emip.12256.
48. †Hong, M., & ***Cheng, Y.** (2019). Robust maximum marginal likelihood (RMML) estimation for item response theory models. *Behavior Research Methods*, 51, 573-588. doi: 10.3758/s13428-018-1150-4.
49. †Hong, M., & ***Cheng, Y.** (2018). Clarifying the effect of test speededness. *Applied Psychological Measurement*. doi: 10.1177/0146621618817783.
50. Polite, B., Cipriano-Steffens, T., Hlubocky, F., Jean-Pierre, P., **Cheng, Y.,** … Fitchett, G. (2018). Association of externalizing religious and spiritual beliefs on stage of colon cancer diagnosis among a black/white multi-center urban patient population. *Cancer, 124*, 2578-2587. doi: 10.1002/cncr.31351.
51. Liu, C., & ***Cheng, Y.** (2018). An application of the support vector machine for attribute-by-attribute classification in cognitive diagnosis. *Applied Psychological Measurement, 42,* 58-72. doi: 10.1177/0146621617712246.
52. Yuan, K., Jiang, G., & **Cheng, Y.** (2017). More efficient parameter estimates for factor analysis of ordinal variables by ridge generalized least squares. *British Journal of Mathematical and Statistical Psychology, 70,* 525-564. doi: 10.1111/bmsp.12098.
53. †Lathrop, Q. N., & ***Cheng, Y.** (2017). Item cloning variation and the impact on the parameters of response models. *Psychometrika, 82,* 245-263. doi: 10.1007/s11336-016-9513-1.
54. ***Cheng, Y.**, Diao, Q., & Behrens, J. (2017). A simplified version of the maximum information per time unit method in computerized adaptive testing**.** *Behavioral Research Methods, 49,* 502-512. doi: 10.3758/s13428-016-0712-6.

55. †Shao, C., Li, J., & *__Cheng, Y.__ (2016). Detection of speeded responses in linear tests based on change-point analysis. *Psychometrika, 81,* 1118-1141**.** doi: 10.1007/s11336-015-9476-7.
56. *__Cheng, Y,__ & Liu, H. (2016). A short note on the maximal point-biserial correlation under non-normality. *British Journal of Mathematical and Statistical Psychology, 69,* 344-351. doi: 10.1111/bmsp.12075.
57. *__Cheng, Y__, & Liu, C. (2016). A note on the relationship between pass rate and multiple attempts. *Journal of Educational Measurement, 53,* 431-447. doi: 10.1111/jedm.12124.
58. *__Cheng, Y.__, †Shao, C., & †Lathrop, Q. (2016). The mediated MIMIC model for understanding the underlying mechanisms of DIF. *Educational and Psychological Measurement, 76,* 1-21. doi: 10.1177/0013164415576187.
59. Narvaez, D., Wang, L, & **Cheng, Y.** (2016). Evolved developmental niche history: Relation to adultpsychopathology and morality. *Applied Developmental Science, 20,* 294-309. doi: 10.1080/10888691.2015.1128835.
60. Jean-Pierre, **Cheng, Y.**, Wells, K. J., Freund, K. M. et. al. (2016). Satisfaction with cancer care among underserved racial-ethnic minorities and lower income patients receiving patient navigation. *Cancer, 122,* 1060-1067. doi: 10.1002/cncr.29902.
61. *__Cheng, Y.__, & Liu, C. (2015). The effect of upper and lower asymptotes of IRT models in computerized adaptive testing. *Applied Psychological Measurement, 39,* 551-565. doi: 10.1177/0146621615585850.
62. *__Cheng, Y.__, Liu, C., & Behrens, J. (2015). Standard error of ability estimates and the classification accuracy and consistency of binary decisions in linear and adaptive testing. *Psychometrika, 80,* 645-664. doi: 10.1007/s11336-014-9407-z.
63. *__Cheng, Y.__, †Patton, J., & †Shao, C. (2015). *a*-stratified computerized adaptive testing in the presence of calibration error. *Educational and Psychological Measurement, 75,* 260-283. doi: 10.1177/0013164414530719.
64. Yuan, K., **Cheng, Y.** & Maxwell, S. (2014). Moderation analysis using a two-level regression model. *Psychometrika, 79,* 701-732. doi: 10.1007/s11336-013-9357-x.
65. †Lathrop, Q. N., & *__Cheng, Y.__ (2014). A nonparametric approach to estimate classification accuracy and consistency. *Journal of Educational Measurement, 51,* 318-334. doi: 10.1111/jedm.12048.

66. Jean-Pierre, **Cheng, Y.**, Paskett, E., †Shao, C. et. al. (2014). Item response theory analysis of the patient satisfaction with cancer-related care measure. *Supportive Care in Cancer*, *22*, 2229-2240. doi: 10.1007/s00520-014-2202-7.
67. †Patton, J., ***Cheng, Y.**, Yuan, K., & Diao, Q. (2014). Bootstrap standard errors for maximum likelihood ability estimates when item parameters are unknown. *Educational and Psychological Measurement, 74,* 697-712. doi: 10.1177/0013164413511083.
68. Yuan, K-H., Cheng, Y., & †Patton, J. (2014). Information matrices and standard errors for MLEs of item parameters in IRT. *Psychometrika*, *79*, 232-254.
69. Narvaez, D., Gleason, T., Brooks, J., Wang, L., Lefever, J., & **Cheng, Y.** (2013). Longitudinal Effects of Ancestral Parenting Practices on Early Childhood Outcomes. *Early Childhood Research Quarterly, 28*, 759-773.
70. ***Cheng, Y.**, Chen, P-H., Qian, J. & Chang, H. (2013). Equated pooled booklet method in DIF testing. *Applied Psychological Measurement*, *37*, 276-288.
71. Narvaez, D., Wang, L., Gleason, T., **Cheng. Y.**, Lefever, J., & Deng, L. (2013). The evolved developmental niche and child sociomoral outcomes in Chinese three-year-olds. *European Journal of Developmental Psychology, 10*, 106-127.
72. †Lathrop, Q. N., & ***Cheng, Y.** (2013). Two approaches to estimation of classification accuracy under the IRT framework. *Applied Psychological Measurement*, *37*, 226-241.
73. ***Cheng, Y.**, & Morgan, D. (2013). Classification accuracy and consistency of computerized adaptive testing. *Behavioral Research Methods, 45*, 132-142.
74. †Patton, J., ***Cheng, Y.**, Yuan, K., & Diao, Q. (2013). The Influence of item calibration error on variable-length computerized adaptive testing. *Applied Psychological Measurement, 37*, 24-40.
75. Kelly, K., & **Cheng, Y.** (2012). Estimation of and confidence interval formation for reliability coefficients of homogeneous measurement instruments. *Methodology, 8*, 39-50.
76. †Patton, J., ***Cheng, Y.**, Yuan, K-H., & Diao, Q. (2012). Computerized classification testing with sequential probability ratio test. *Psychological Test and Assessment Modeling*, *54*, 432-449.
77. ***Cheng, Y.**, Yuan, K-H, & Liu, C. (2012). Comparison of reliability measures under factor analysis and item response theory. *Educational and Psychological Measurement, 72*, 52-67.

78. ***Cheng, Y.** (2010). Improving cognitive diagnostic computerized adaptive testing by balancing attribute coverage: The modified maximum global discrimination index method. *Educational and Psychological Measurement, 70,* 902-913.
79. Yuan, K-H, **Cheng, Y.**, & Zhang, W. (2010). Determinants of standard errors of MLEs in confirmatory factor analysis. *Psychometrika, 75*, 633-648.
80. ***Cheng, Y.** & Yuan, K-H. (2010). The impact of fallible item parameter estimates on latent trait recovery. *Psychometrika, 75*, 280-291. (equal contribution authors)
81. ***Cheng, Y.** (2009). When cognitive diagnosis meets computerized adaptive testing: CD-CAT. *Psychometrika, 74*, 619-632.
82. ***Cheng, Y.**, & Chang. H. (2009). The maximum priority index method for severely constrained item selection in computerized adaptive testing. *British Journal of Mathematical and Statistical Psychology, 62*, 369-383.
83. ***Cheng, Y.**, Chang, H., Douglas, J., & Guo, F. (2009). Constraint-weighted a-stratification for computerized adaptive testing with nonstatistical constraints: Balancing measurement efficiency and exposure control. *Educational and Psychological Measurement, 69,* 35-49.
84. ***Cheng, Y.**, Chang, H., & Yi, Q. (2007). Two-phase item selection procedure for flexible content balancing in CAT. *Applied Psychological Measurement, 31*, 467-482.

Book Chapters, Reviews and Encyclopedia Entries

[†]: Cheng's Current/Former Graduate Student; [U]: Undergraduate Student; [P]: Postdoc
*: Cheng as Corresponding Author.

1. [†]Denner, M., [†]Xu, X., [P]Ober. T, [P]Pei, B., & ***Cheng, Y. (in press) *Predicting response latencies on test questions based on features of the questions.* In Khine M. (Ed), Machine learning in educational sciences: Approaches, applications and advances.
2. [P]Ober, T. M., [†]Xu, X., [†]Denner, M., [†]Hong, M., & ***Cheng, Y. (in press). *Applying Topic Modeling to Understand Assessment Practices of U.S. College Instructors in Response to the COVID-19 Pandemic.* In Khine M. (Ed), Machine learning in educational sciences: Approaches, applications and advances.
3. [†]Brodersen, A., [†]Carter, M. F., Liu, C., & ***Cheng, Y. (2021). *Collection of process data in web-based assessment systems and its applications to validating non-cognitive constructs*. In

H. Jiao & R. Lissitz (Eds.), Enhancing Effective Instruction and Learning Using Assessment Data. Charlotte, NC: Information Age Publisher.

4. [P]Yu, X., ***Cheng, Y.**, & Chang, H. (2019). Cognitive diagnostic computerized adaptive testing (CD-CAT). In von Davier & Lee (Eds.), *Handbook of Diagnostic Classification Models*. Springer.
5. [†]Brodersen, A., [†]Shao., C., & ***Cheng. Y.** (in press). Parameter Random Error. In Frey, B. (Ed), *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*.
6. Gleason, T., Narvaez, D., **Cheng, Y.**, Wang, L., & Brooks, J. (2016). Wellbeing and sociomoral development in preschoolers: The role of maternal parenting attitudes consistent with the evolved developmental niche. In Narvaez, D. et al. (Eds.), *Contexts for Young Child Flourishing: Evolution, Family, and Society.* New York, NY: Oxford University Press.
7. Gleason, T., Narvaez, D., **Cheng, Y.**, Wang, L., & Brooks, J., (2016). The relation of nurturing parenting attitudes to flourishing in preschoolers. In Narvaez, D. et al. (Eds.), *Contexts for young child flourishing: Evolution, family and society*. New York, NY: Oxford University Press.
8. Narvaez, D., Gleason, T., Lefever, J. B., Wang, L., & **Cheng, Y.** (2016). Early experience and ethical orientation. In Narvaez, D. (Ed.), *Embodied morality: Protectionism, engagement and imagination*. New York, NY: Palgrave-Macmillan.
9. von Davier, M., & **Cheng, Y.** (2014). Multistage testing using cognitive diagnostic models. In Yan, D., von Davier, A., & Lewis, C. (Eds.) *Computerized Multistage Testing: Theory and Applications*. Boca Raton, FL: CRC Press.
10. ***Cheng, Y.** & Cheng. Y. (2014). Repeated statistical tests in group sequential clinical trial designs and their potential applications in educational assessment. In Cheng, Y., & Chang, H. (Eds). *Advancing Methodologies to Support both Summative and Formative Assessments*. Charlotte, NC: Information Age Publishing.
11. [†]Patton. J, & ***Cheng, Y.** (2014). Effects of item calibration error on applications of item response theory. In Cheng, Y., & Chang, H. (Eds). *Advancing Methodologies to Support both Summative and Formative Assessments.* Charlotte, NC: Information Age Publishing.
12. ***Cheng, Y.** (2012). Review of Elements of Adaptive Testing. *Journal of Educational Measurement, 49*, 116-119.

13. ***Cheng, Y.**, & Keng, L. (2009). Computerized adaptive testing in criterion-referenced testing. In Smith, E. & Stone, G. (Eds.), *Applications of Rasch Measurement in Criterion-Reference Testing: Practice Analysis to Score Reporting*. JAM Press.
14. ***Cheng, Y.**, & Keng, L. (2009). Book review: H.Wainer, E.T. Bradlow, & X. Wang (2007) Testlet Response Theory and Its Applications. *Psychometrika, 74*, 555-557.
15. ***Cheng, Y.**, & Chang, H. (2007). The modified maximum global discrimination index method for cognitive diagnostic CAT. In D. Weiss (Ed.) *Proceedings of the 2007 GMAC Computerized Adaptive Testing Conference*.
16. Chang, H., & **Cheng, Y.** (2005). The new developments and future research direction in computerized adaptive testing. *Testing Research, 2* (Chinese with English Abstract).

Invited Lectures and Addresses since Joining ND

1. Cheng, Y. (2023, Nov). *Using Response Time Data to Detect Response Anomalies in Assessment.* Keynote Speech at the 2023 Conference of Research on Psychometrics and Applied Statistics, University of Washington.
2. Cheng, Y. (2023, Sept). *Intelligent Diagnostic Assessment Platform (i-DAP) for Statistics Education.* Invited panel speech at the 2023 Games Expo, Institute for Education Sciences.
3. Cheng, Y. (2023, Feb). *Preventing Garbage In, Garbage Out: Quality Control of Survey and Assessment Data*. Tucker-Holland Workshop, ETS.
4. Cheng, Y. (2022, Sept). *Cognitive Diagnostic Computerized Adaptive Testing: Recent Developments and Future Directions.* Keynote Speech at the 2022 Conference of International Association of Computerized Adaptive Testing, Frankfurt, Germany.
5. Cheng, Y. (2022, Feb). *Algorithmic Bias: Is Computerized Adaptive Testing Fair*? Invited talk given at University of Illinois at Urbana-Champaign, Quantitative Psychology Brownbag.
6. Cheng, Y. (2021, Jan). *Statistical quality control in high-stakes and low-stakes assessments*. Invited talk given at University of Michigan Department of Statistics Seminar Series.
7. Cheng, Y. (2019, November). *Collection of process data in web-based assessment systems and its applications to validating non-cognitive constructs*. Talk delivered at the 19th Annual MARC (Maryland Assessment Research Center) Conference, University of Maryland, College Park.
8. Cheng, Y. (2019, July). *Q-matrix validation: A new method to examine construct validity.* Talk delivered at the Federal Institute of Empirical Educational Research, Salzburg, Austria.

9. Cheng, Y. (2019, June). *Detection of inattentive responses using change point analysis*. High-Profile Talk delivered at the Center of Educational Measurement, University of Oslo, Oslo, Norway.
10. Cheng, Y. (2019, May). *Ethics and measurement*. Invited talk given at the Social Sciences Division (undergraduate students), University of Science and Technology of China (USTC), Hefei, China.
11. Cheng, Y. (2019, May). *Ethical issues in psychometric research and culturally fair assessments*. Invited talk given at the Social Sciences Division (graduate students), University of Science and Technology of China (USTC), Hefei, China.
12. Cheng, Y. (2018, July). *Quality control of item response data*. Invited talk given at the Focus Series: Conference on Statistical Methods for Innovative Testing and Learning. Columbia University, NY.
13. Cheng, Y. (2018, March). *Detection of low motivation/effort in pretesting data: Preliminary results from item response times.* Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
14. Cheng, Y. (2017, August). *Parallel analysis with large amounts of planned missingness.* Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
15. Cheng, Y. (2017, July). *Statistical Quality Control in Testing.* Invited talk given at the 2017 International Meeting of Psychometric Society, Zurich, Switzerland.
16. Cheng, Y. (2017, June). *Statistical Quality Control in Psychometrics.* Invited talk given at the Social Sciences Division, University of Science and Technology of China (USTC), Hefei, China.
17. Cheng, Y. (2016, August). *Pretesting design and dimensionality assessment of new item types*. Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
18. Cheng, Y. (2016, March). *Computerized adaptive testing: Its history and development (with a focus on recent developments).* Invited talk given at University of Zurich, Zurich, Switzerland.

19. Cheng, Y. (2016, March). *Computerized adaptive testing: Its history and development.* Invited talk given at DagStat Conference, German Consortium of Statistics, Gottingen, Germany.
20. Cheng, Y. (2016, March). *Alternate item format, pretesting design, data sparseness and test dimensionality.* Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
21. Cheng, Y. (2014, November). *Detection and treatment of aberrant responses in psychological and educational testing data*. University of California at Davis, Davis, CA.
22. Cheng, Y. (2014, September). *The maximum information per time unit method in computerized adaptive testing*. Invited presentation given at the CTB/McGraw-Hill mid-year R&D symposium, Monterey, CA.
23. Cheng, Y. (2014, August). *Use Bi-factor modeling for subscore reporting of NCLEX-RN.* Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
24. Cheng, Y. (2013, September). *Detection and treatment of careless responses in pretesting data.* Invited presentation given at CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
25. Cheng, Y. (2013, July). *Classification decisions in testing*. State of the Art invited talk at the 2013 International Meeting of the Psychometric Society, Arnhem, the Netherlands.
26. Cheng, Y. (2012, April). *Uncertainty propagation in testing*. Invited talk given at the Award Winner Session of the annual meeting of National Council of Measurement in Education, San Francisco, CA.
27. Cheng, Y. (2013, March). *Invited workshop on computerized adaptive testing.* Friedrich-Schiller-Universitat, Jena, Germany.
28. Cheng, Y. (2012, September). *Quantitative psychology: Its history, development and future*. Invited talk co-hosted by Beijing Normal University and the National Center of Educational Testing and Evaluation of China, Beijing, China.
29. Cheng, Y. (2012, September). *Theoretical development and applications of computerized adaptive testing.* Invited talk given at the 10th Cross-Strait Psychometric Conference, Nanchang, China.

30. Cheng, Y. (2011, October). *Standard error of latent trait estimates in IRT when item calibration error is present*. Invited presentation given at the CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
31. Cheng, Y (2011, March). *The interaction of exposure control methods and item calibration error in variable-length CAT* Featured speaker at CTB/McGraw-Hill R & D Annual Event, Monterey, CA.
32. Cheng, Y. (2010, September). *The impact of fallible item parameters on variable-length CAT*. Invited presentation given at CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
33. Cheng, Y. (2010, June). *Modern psychometrics*. Invited talk series given at College of Education, Soochow University, Suzhou, China.
34. Cheng, Y. (2009, July). *The interface of computerized adaptive testing and diagnostic assessment.* Invited talk given at the Statistical and Applied Mathematical Sciences Institute (SAMSI) 2009 Summer Program on Psychometrics, Research Triangle Park, NC.
35. Cheng, Y. (2009, January). *Item pool development in computerized adaptive testing.* Invited talk given at the Center of National Assessment of Education Quality, Ministry of Education of China, Beijing, China.
36. Cheng, Y. (2009, January). *Automated test assembly.* Invited talk given at Shanghai Municipal Educational Examinations Authority, Shanghai, China.
37. Cheng, Y. (2008, December). *The history, development and prospect of psychometrics*. Invited talk given at the University of Science and Technology of China, Hefei, China.

Grants and Sponsored Programs

Pending

PI: Exploring Equitable Use of Metrics of Student Engagement in an Online Assessment System for Statistics. Institute for Education Sciences, Education Research Grant. $1,698,366.

Co-PI: Assessing the malleability and impact of third through eighth grade students' mature number sense (PI: Patrick Kirkland). NSF ECR Core. $913,735.

Co-PI: REU Site: Data Science for Advanced Manufacturing. $773,014

Co-PI: Planning a Partnership to Support and Research a Three-tier Near-Peer Model for Integrated Data Science Education. Spencer Foundation. $75,000.

Co-PI: Bridging the Equity Gap Between Education Researchers and K12 Teachers. Spencer Foundation. $75,000.

Current

Co-PI. 2023 – 2027. "C2D - Cybertraining for Chemical Data scientists". *National Science Foundation.* $1,000,000.

Co-I. 2022 – 2024. Improving momentary suicide risk identification through adaptive time sampling. *NIH.* $ 234,750.

Co-PI. 2021 – 2023. Characterizing and assessing number sense in third through eighth grade students. *NSF.* $553,429.

PI. 2019 – 2023. "RR: Stop "Garbage In": Statistical Quality Control of Low-Stakes Survey and Assessment Data". *National Science Foundation.* $330,000.

PI. 2018 – 2023. "Intelligent Diagnostic Assessment Platform (i-DAP) for High School Statistics Education". *Institute of Education Sciences.* $1,399,950.

Completed External Grants

Co-PI. 2020 – 2023. Test Mode and Students' Test Taking Experience: Investigating Test Anxiety, Perceived and Actual Performance Differences among Underrepresented Groups in STEM. *Spencer Foundation*. $50,000.

Co-PI. 2020-2021. "YWCA-SV Curated Pathways to Innovation Research Seed Funding". *YWCA Silicon Valley.* $78,099.

PI. 2014 – 2020 (with one-yr extension). "CAREER: Cognitive diagnostic computerized adaptive testing for AP Statistics". *National Science Foundation, DRL-1350787.* $592,986.

PI. 2018 – 2020. "Supplement: CAREER: Cognitive diagnostic computerized adaptive testing for AP Statistics". *National Science Foundation, DRL-1350787.* $71,575.

Co-PI. 2019. "Online Calibration of Response Time Models". *DFG (German Research Foundation, PI: Dr. Andreas Frey, Goethe University).* €5,300.

PI. 2016 – 2018. **"**Pretesting and Dimensionality Assessment of New Prototype Items". *National Council of State Boards of Nursing.* $41,190.

Co-PI. 2015 – 2018. "Structural equation modeling for small *N* and large *p*" (PI: Dr. Ke-Hai Yuan). *National Science Foundation, Methodology, Measurement and Statistics Program.* $349,998.

PI. 2015. "Bi-factor modeling for subscore reporting of NCLEX-RN". *National Council of State Boards of Nursing*. $42,860.

PI. 2015. Career-Life Balance Initiative Supplemental Funding. *National Science Foundation.* $24,186.

PI. 2014. "A close look at response time in computerized adaptive testing". Innovation R & D Grant from *CTB/McGraw-Hill*. $51,159.

PI. 2013. "Careless response in testing: Detection of such responses, and analysis of their propagating impact on item calibration, ability estimation, and examinee classification". Innovation R & D Grant from *CTB/McGraw-Hill*. $85,059.

PI. 2012. "Analysis of the *MyMathTest* data and development of the adaptive version MyMathTest". *Pearson,* Inc. $37,000

PI. 2011. "Standard error estimation in IRT: Formula, bootstrap or MCMC?". Innovation R & D Grant from *CTB/McGraw-Hill*. $83,370.

PI. 2010. "Correction of calibration error in computerized adaptive testing". Innovation R & D Grant from *CTB/McGraw-Hill*. $90,000

Completed Internal Grants

PI. 2023. Flip the Script: Trustworthy AI Lab in Education. NDR. $15,000.

PI. 2023. Large Henkel Grant: Notre Dame Trustworthy AI Lab in Education Summit (TALES). ISLA. $20,000.

PI. 2021. Testing Experiences of Students and Instructors during COVID-19: Issues of Equity, Validity, and Mode Effects of Online and Remote Testing. ISLA. $2833.30.

PI. 2020. "Effects of Test Mode on Underrepresented Students in STEM". ISLA Large Social Science Grant. $14,905.

PI. 2020**.**"Effects of Test Mode and Test Anxiety among Underrepresented Students in STEM". IEI Seed Grant. $3,500.

PI. 2019. "Web-CAT: An Interactive Web-Based System for Computerized Adaptive Testing". International Research Travel Grant, University of Notre Dame. $3,500.

PI. 2013 "Variable-length cognitive diagnostic adaptive testing module for AP statistics". Faculty Scholarship Research Program Initiation Grant from *Office of Research* at University of Notre Dame. $10,000.

PI. 2013 "Pilot Study -- Construction of an Item Bank for Advanced Placement Level Statistics with Cognitive Diagnostic Modeling". Bi-Annual Spring 2013 Large Social Sciences Research Grant, *ISLA*, University of Notre Dame. $8,000.

Co-PI. 2012. "Caregiving for the human developmental niche and child thriving". (PI, Darcia Narvaez). ISLA, Notre Dame. $6,000.

Co-PI. 2011. "First Birthday Club". (PI: Darcia Narvaez). *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. $7,478.

Co-PI. 2010. "Caregiving and child social, cognitive and moral development." (PI: Darcia Narvaez). *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. $15,000

PI. 2009. "Computerized adaptive system for cognitive diagnosis: A one-year pilot study of CD-CAT". Pilot funds for research in the social sciences, *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. $12,844.

Referred Conference Presentations since Joining ND

†Current/Former Graduate Student Supervisee; *U*Undergraduate Student

1. [G]Lu, Y., [G]Tong, L., & Cheng, Y. (2023, December). *Advanced Knowledge Tracing for Intelligent Tutoring Systems: Incorporating Process Data and Curricula Information via an Attention-Based Framework*. Paper presented at Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES).
2. [G]Duan, Q., [P]Le, A. T., & Cheng., Y. (2023, Dec) *A Machine Learning Approach to Assess Differential Item Functioning in Educational Testing and Examine Factors in Linking.* Lightning talk presented at Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES).
3. [U]Sanders, M., [P]Le, A. T., & Cheng., Y. (2023, Dec) *Assessing ChatGPT's Proficiency in Generating Accurate Questions and Answers for Algebra 1*. Poster presented at Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES).
4. [U]Joyce, T., [P]Pei, B. & Cheng., Y. (2023, Dec) *Learning Analytics in Organic Chemistry.* Poster presented at Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES). *Poster award winner
5. [P]Le, A. T. & Cheng., Y. (2023, Nov) *Link-DIF: An iterative DIF detection and equating procedure using logistic regressions*. Paper presented at the Ideas in Testing Seminar, Chicago, IL, Nov 10, 2023.
6. [G]Duan, Q. & Cheng, Y. (2023, Nov) *Nonparametric Response Time Estimation for Evaluating Model Fit*. Paper presented at the 2023 Ideas In Testing Research Seminar, Chicago, IL.
7. [G]Lu, Y. & Cheng, Y. (2023, July). *Bootstrap standard errors for LDA, NCA, and transformation-matrix methods with multiple solutions*. Paper presented at the International Meeting of the Psychometric Society, College Park, MD, July 24th–28th, 2023.
8. [G]Lu, Y. & Cheng, Y. (2023, April). *Extended sequential item response model for multiple-choice, multiple-attempt test items*. Paper presented at the Annual Meeting of the National Council on Measurement in Education, Chicago, IL, April 12th–15th, 2023.

9. [U]Kane, E., [U]Blacklock, C., [G]Duan, Q., [P]Ober, T., & Cheng, Y. (2023, May) *Student Engagement During COVID-19: A Systematic Review and Meta-Analysis*. Poster presented at the 2023 Association for Psychological Science Annual Convention, Washington DC.
10. [G]Denner, M., [G]Xu, X., [P]Pei, B., [P]Ober, T. M., & Cheng., Y. (2023, April). *Predicting response latencies on test questions using qualities of the written text*. Paper presented at the Annual Meeting of the National Council on Measurement in Education, Chicago, IL, April 12th–15th, 2023.
11. [G]Filonczuk, A. & Cheng, Y. (2023, April) *Robust Estimation of the Latent Trait in Graded Response Models*. Paper presented at the 2023 annual meeting of National Council on Measurement in Education Meeting, Chicago, IL.
12. [G]Duan, Q. & Cheng, Y. (2023, April) *Detecting DIF in Response Time Using Bootstrap Percentile Method*. Paper presented at the annual meeting of National Council on Measurement and Education, Chicago, IL.
13. [P]Ober, T. M., [G]Hong, M. R., [U]Morse, K. & Cheng., Y. (2022, April). *Classroom assessment experiences of college students during COVID-19*. Paper accepted at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, San Diego, CA, April 22nd–25th, 2022.
14. [P]Ober, T. M., Liu, C., [G]Lu, Y. & Cheng., Y. (2022, April). *Adaptive v. non-adaptive test mode effects on effort, test anxiety, and performance*. Paper accepted at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, San Diego, CA, April 22nd–25th, 2022.
15. [U]Filonczuk, A., [G]Hong, M., & Cheng, Y. (2022, April). *Robust Estimation of Ability in Multidimensional Item Response Theory*. Paper accepted at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, San Diego, CA, April 22nd–25th, 2022.
16. Cheng, Y. (2022, April). Applications of Response Time in Measurement. Symposium accepted at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, San Diego, CA, April 22nd–25th, 2022.
17. [P]Ober, T. M., Cheng, Y., Carter, M. F., & Liu, C. (2022, April). Differences in course engagement and learning in AP Statistics: Examining the disruptiveness of COVID-19. Routable presentation accepted at the Annual Meeting of the American Educational Research Association, San Diego, CA, April 22nd–25th, 2022.
18. [P]Ober, T. M., [U]Denner, M., Liu, C., & Cheng, Y. (2022). Comparing subjective and objective estimates of effort and performance on adaptive vs. non-adaptive computerized tests of statistics knowledge. International Society of the Learning Sciences.
19. Ober, T. M., Kokodkar, M., Cheng, Y., Gonsalves, P., Brenner, P., Johnson, E., Ribeiro, B., & Zdankus, J. (2021, November). *Curating computer science educational content with machine learning.* Talk presented at the American Psychological Association's conference on Technology, Mind & Society Meeting, November 3rd–5th, 2021. [Meeting held virtually]
20. [P]Ober, T. M., Cheng, Y., Liu, C., & Carter, M. F. (2021, May). *Development of a self-report measure to capture learner's mental effort and perceived task difficulty.* Flash Talk presented at the Association for Psychological Science Meeting, May 26th–September 1st, 2021.
21. [P]Ober, T. M., [G]Hong, M. R., [G]Rebouças, D. A., Carter, M. F., Liu, C., & Cheng, Y. (2021, April). *Self-report and process data indicators of engagement: Unique predictors of performance across assessment types.* Paper presented at the Annual Meeting of the American Educational Research Association, April 8th–12th, 2021. [Meeting held virtually]
22. [P]Ober, T. M., Cheng, Y., Urdan, T., Brenner, P., Zdankus, J., Gonsalves, P., Johnson, E., & Martinez, V. (2021, April). *Results of a personalized intervention to promote children's and adolescent's computer programming career opportunities.* Flash talk presented at the Biennial Meeting of the Society for Research on Child Development, April 7th–9th, 2021. [Meeting held virtually]

23. [U]Hirsch, C., [P]Ober, T. M., & Cheng, Y. (2021, July). *Predicting middle school students' self-efficacy in computer programming using linear mixed models*. Poster presented at the University of Notre Dame Undergraduate Summer Research Symposium, Notre Dame, IN, July 21st, 2021.
24. [U]Lin, D. T., [P]Ober, T. M., & Cheng, Y. (2021, July). *The effect of informal STEM Experience: A mediation analysis*. Poster presented at the University of Notre Dame Undergraduate Summer Research Symposium, Notre Dame, IN, July 21st, 2021.
25. [U]Nonamaker, S., Cheng, Y., & [P]Ober, T. M. (2021, July). *Exploratory factor analysis of the computer programming attitudes scale: evidence of proximal and distal outcome expectations*. Poster presented at the University of Notre Dame Undergraduate Summer Research Symposium, Notre Dame, IN, July 21st, 2021.
26. [U]Wan, A., [P]Ober, T. M., Cheng, Y., Urdan, T., Brenner, P., Zdankus, J., Johnson, E., & Gonsalves, P. (2021, May). *Math and computer programming attitudes as predictors of engagement in a K-12 STEM online learning environment.* Undergraduate poster presented at the Association for Psychological Science Meeting, May 26th–September 1st, 2021. [Meeting held virtually]
27. [U]Seksaria, A., [P]Ober, T. M., & Cheng, Y. (2021, May). *Student engagement in an AP Statistics course before and after the transition to remote online instruction amidst COVID-19.* Undergraduate poster presented at the Association for Psychological Science Meeting, May 26th–September 1st, 2021. [Meeting held virtually]
28. [U]Coggins, M. R., [P]Ober, T. M., Cheng, Y., Urdan, T., Brenner, P., Zdankus, J., Johnson, E., & Gonsalves, P. (2021, April). *Changing computer programming attitudes over time: Effects of an intervention for girls and URM students.* Undergraduate poster presented at the Midwestern Psychological Association Meeting, April 22nd–24th , 2021. [Meeting held virtually]
29. Kirkland, P.K., Cheng, Y., Trinter, C., & McNeil, N.M. (2021) *Analyzing Student Use of Number Sense Strategies*. Paper is accepted to be presented virtually at the 2021 annual National Council of Teachers of Mathematics (NCTM) Research Conference.
30. [U]Coggins, M. R., [P]Ober, T. M., [G]Rebouças, D. A., [U]Suzuki, H., & Cheng, Y. (2020, May). *Teacher support and math attitudes: Split sample confirmatory factor analyses and structural equation model.* Poster to be presented at the Annual Meeting of the Association for Psychological Science, Chicago, IL, May 21st–24th, 2020.
31. [G]Hong, M., Cheng, Y., & [G]Wilcox, K. (2020, July). *A joint modeling framework for item response and topic models*. Paper to be presented at the Annual Meeting of the International Meeting of Psychometric Society, College Park, MD, July 14 - 17, 2020.
32. [G]Brodersen, A, & Cheng, Y. (2020, July). *Semi-parametric item response theory using CART as a link function*. Paper to be presented at the Annual Meeting of the International Meeting of Psychometric Society, College Park, MD, July 14 - 17, 2020.
33. [P]Ober, T. M., [G]Rebouças, D. A., [G]Brodersen, A. S., Carter, M., & Cheng., Y. (2020, April). *Examining how engagement mediates the association between procrastination and math anxiety.* Roundtable presentation to be held at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 17th–21st , 2020.
34. [P]Ober, T. M., [G]Brodersen, A. S., & Cheng., Y. (2020, April). *Correcting the effects of missing at random data on polychoric correlations.* Paper to be presented at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, April 16th–20th, 2020.
35. Cheng., Y. (2020, April). *A New Multi-Method Approach of Using Response Time to Detect Low Motivation.* Paper to be presented at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, April 16th–20th, 2020.
36. [G]Reboucas, D. A., & Cheng, Y. *Joint Modeling of Response Times and Item Response Data using a GLM Approach*. Paper to be presented at the Annual Meeting of the National Council on Measurement in Education, San Francisco, CA, April 16th–20th, 2020.

37. [U]Suzuki, H., [†]Hong, M., & **Cheng, Y.** (2020, March). *Factors influencing long-term versus snapshot test performance in high-stakes versus low-stakes contexts*. Paper to be presented at the 2020 ACC Meeting of the Minds Conference. Chapel Hill, NC.
38. [P]Ober, T., [†]Brodersen, A., [†]Reboucas, D., [†]Carter, M., & **Cheng, Y.** (2019, October). Performance on an AP Statistics Practice Exam is Associated with Students' Predicted Scores and Course Engagement, not Number of Math Classes Previously Taken. Poster presented at the 2019 Conference of the Cognitive Development Society, Louisville, KY.
39. [G]Brodersen, A., Carter, M., & Cheng, Y. (2019, August). Leveraging Process Data to Investigate Academic Outcomes. Paper presented at the American Psychological Association Annual Convention, Chicago, IL.
40. [U]Frasier, I., [†]Brodersen, A., [P]Ober, T., & **Cheng, Y.** (2019, July). *Teacher support indirectly affects active procrastination via math attitudes.* Poster presented at Computational Social Science Research Experience for Undergraduates (REU) seminar, Notre Dame, IN.
41. [U]Thuesen, I., **Cheng, Y.** [P]Ober, T., [†]Brodersen, A., & [U]Frasier, I. (2019, July). *What Predicts Math Attitudes? Examining Associations with Demographic Characteristics and Personality Traits as Predictors.* Poster presented at Computational Social Science Research Experience for Undergraduates (REU) seminar, Notre Dame, IN.
42. [†]Brodersen, A., & **Cheng, Y.** (2019, July). *Penalized estimation of IRT models with multiple location parameters.* Paper to be presented at the International Meeting of the Psychometric Society, Santiago, Chile.
43. [†]Reboucas, D., & **Cheng, Y.** (2019, July). *Bivariate change-point analysis for response accuracy and response time data.* Paper to be presented at the International Meeting of the Psychometric Society, Santiago, Chile.
44. [U]DaDamio, R., [†]Brodersen, A., & **Cheng, Y.** (2019, May). *The multidimensional engagement construct and its influence on AP Statistics students' achievement*. Poster presented at the 2019 Convention of Association of Psychological Science, Washington DC.
45. [U]Zhang, S., [†]Hong, M., & **Cheng, Y**. (2018, November). *Evaluation of R packages with IRT 2PL dichotomous model*. Paper presented at the Ideas and Testing Conference, Chicago, IL.
46. **Cheng, Y.** (2018, November). *Measurement error and its influence on power, sample size planning, & replicability*. ND Piers Colloquium of Institute for Educational Initiatives, Notre Dame, IN.
47. [†]Yu, X. & **Cheng, Y.** (2018, July). *Using CPA-based weighted residual method to detect carelessness*. Paper presented at the International Meeting of Psychometric Society, New York, NY.
48. [†]Hong, M. & **Cheng, Y.** (2018, July). *Robust estimation for item response theory.* Paper presented at the International Meeting of Psychometric Society, New York, NY.
49. [†]Brodersen, A., & **Cheng, Y.** (2018, July). *Change point analysis for backward-random responses*. Paper presented at the International Meeting of the Psychometric Society, New York City, NY.
50. [†]Reboucas, D. & **Cheng, Y.** (2018, July) *DIF effect size measures: Review and implications for power of DIF detection*. International Meeting of Psychometric Society, New York, NY.
51. [U]Johnston, A., [†]Reboucas, D., **Cheng, Y.** (2018, July). *Are all personality inventories equal? Assessing the applicability of the BFI-2 to adolescent boys and girls*. Poster presented at Computational Social Science Research Experience for Undergraduates (REU) seminar, Notre Dame, IN.
52. [†]Yu, X. & **Cheng, Y.** (2018, April). *Using CUSUM and CPA to detect speededness*. Paper presented at the Annual Meeting of the National Council on Measurement in Education, New York, NY.
53. [†]Campbell, I. & **Cheng, Y.** (2018, April). *Bayesian item linking through informative priors*. Poster presented at the American Educational Research Association Div D Research Gala, New York City, NY.

54. †Reboucus, D.. & **Cheng, Y**. (2017, October). *Investigating item characteristics and DIF in MIMIC*. 2017 Ideas in Testing Seminar, Chicago, IL.
55. †Yu, X. & **Cheng, Y.** (2017, September). *Using response time to detect speededness based on CUSUM*. 2017 Ideas in Testing Seminar, Chicago, IL.
56. †Hong, M., & **Cheng. Y.** (2017, September). *Data quality in assessment*. 2017 Conference on Test Security, Madison, WI.
57. †Yu, X. & **Cheng, Y.** (2017, September) *Using change point analysis to detect inattentiveness in polytomous survey response data*. 2017 Conference on Test Security, Madison, WI.
58. †Brodersen, A., & **Cheng, Y.** (2017, September). *Modeling item sharing for high-stakes tests: An epidemiological perspective.* 2017 Conference on Test Security, Madison, WI.
59. *U*Henry, M. R., *U*Speedon, I., †Whitney, B. M., †Brodersen, A., & **Cheng, Y.** (2017, July) *Longitudinal effects of food insecurity on academic ability scores*. Poster presented at the 2017 Notre Dame NSF Computational Social Science REU Seminar.
60. *U*Speedon, I., *U*Henry, M. R., †Whitney, B. M., †Brodersen, A., & **Cheng, Y.** (2017, July) *Comparing tree-based model's variable accuracy for school crime*. Poster presented at the 2017 Notre Dame NSF Computational Social Science REU Seminar.
61. †Brodersen, A., & **Cheng, Y.** (2017, July). *Modified parallel analysis for data with planned missingness.* International Meeting of Psychometric Society, Zurich, Switzerland.
62. †Whitney, B., & **Cheng, Y.** (2017, July). *An examination of the individual differences of and between passive and active procrastination.* The 10th International Conference on Procrastination, Chicago, IL.
63. †Brodersen, A., & **Cheng, Y.** (2017, Apirl). *Impact of item pre-knowledge on measurement outcomes in computerized adaptive testing.* Annual Meeting of National Council for Measurement in Education, San Antonio, TX.
64. †Shao, C., & **Cheng. Y.** (2017, April). *Detection of test speededness using change-point analysis with response time data.* Annual Meeting of National Council for Measurement in Education, San Antonio, TX.
65. Narvaez, D., **Cheng, Y.,** Woodbury, R., Gleason, T., Lefever, J. B., & Wang, L. (2016, December). *Relation of early nest experience to moral development in young children*. Association for Moral Education annual meeting, Harvard University, Boston.
66. **Cheng, Y.,** & †Hong, M. (2016, October). *The effect of random guessing on reliability and validity.* Ideas in Testing Seminar, Chicago, IL.
67. †Shao, C., & **Cheng, Y.** (2016, October). *Detection of test speededness using change-point analysis with response time data*. Ideas in Testing Seminar, Chicago, IL.
68. *U*Kennedy, K. G., †Brodersen, A., †Whitney, B. M., Liu, C., & **Cheng. Y.** (2016, Oct). *The AP-CAT project: Integrating cognitive diagnostic modeling with computerized adaptive testing for educational assessment*. National Science Foundation Forum for REU Research, Washington DC.
69. Narvaez, D., **Cheng, Y.,** Woodbury, R., Gleason, T., Lefever, J.B., & Wang, L. (2016, Aug). *Child wellbeing and sociomorality relations to current experience of the evolved developmental niche*. 2016 Annual Convention of American Psychological Association, Denver, CO.
70. *U*LeBeau, K., †Brodersen, A., †Whitney, B. M., & **Cheng. Y.** (2016, July). *Improving the prediction of student engagement*. Poster presented at the 2016 Notre Dame NSF Computational Social Science REU Seminar.
71. †Brodersen, A., & **Cheng, Y.** (2016, July). *The impact of item pre-knowledge on measurement outcomes of CAT.* Annual meeting of International Meeting of Psychometric Society, Asheville, NC.
72. †Reboucus, D., & **Cheng, Y**. (2016, April). *Handling missing data on DIF detection under the MIMIC model*. Annual Meeting of National Council for Measurement in Education, Washington DC.

73. †Shao, C., & **Cheng, Y.** (2016, April). *A procedure to improve item parameter estimation in presence of test speededness*. Annual Meeting of National Council for Measurement in Education, Washington DC.
74. **Cheng, Y**., & Liu, C (2016, April). *The relationship between pass rat and multiple attempts on a test*. Annual Meeting of National Council for Measurement in Education, Washington DC.
75. **Cheng, Y**., & Liu, C (2015, November). *Classification accuracy of a test battery under multiple decision rules*. Ideas in Testing Conference, Chicago, IL.
76. Liu, C, & **Cheng, Y**. (2015, July). *Cognitive diagnostic assessments using support vector machine – a simulation study*. 2015 International Meeting of Psychometric Society, Beijing, China.
77. Liu, C, & **Cheng, Y**. (2015, April). *The use of support vector machine in cognitive diagnostic assessments*. 2015 NCME annual Meeting, Chicago, IL.
78. Narvaez, D., Wang, L., **Cheng, Y**., Gleason, T, & Burke, J. (2015, April). *The importance of early life touch for psychosocial and moral development*. 2015 SRCD Biennial Meeting, Philadelphia, PA.
79. Kurth, A., Narvaez, D., Wang, L., **Cheng, Y**., Gleason, T, & Burke, J. (2015, April). *Maternal positive and negative touch behaviors longitudinally predict temperament and social-emotional delays*. 2015 SRCD Biennial Meeting, Philadelphia, PA.
80. Jean-Pierre, P., †Shao, C., & **Cheng, Y.** (2015, March). *Patient satisfaction with interpersonal relationship with navigators: Item response theory analysis in a multicultural sample of 751 cancer patients*. 2015 International Convention of Psychological Sciences (ICPS), Amsterdam, The Netherlands.
81. †Shao, C., Li, J., & **Cheng, Y.** (2014, November). *Detection of speeded responses in linear tests based on change-point analysis*. 2014 Ideas in Testing Seminar, Chicago, IL.
82. †Shao, C., Kim, D., **Cheng, Y.** & Luo, X. (2014, October) *A Change point-detection based method for warm-up effect detection in computerized adaptive testing*. 2014 Meeting of International Association for Computerized Adaptive testing, Princeton, NJ.
83. **Cheng, Y.,** & †Patton, J. M. (2014, May). *Detection and treatment of careless responses in survey data*. Poster at the annual convention of the Association for Psychological Science, San Francisco, CA.
84. **Cheng, Y.,** Behrens, J., & Diao, Q. (2014, April). *Response time in computerized adaptive testing*. 2014 Meeting of National Council of Measurement in Education, Philadelphia, PA.
85. †Shao, C., **Cheng, Y.** & Lathrop, Q. (2014, April.) *Anchors selection embedded mediated MIMIC model for understanding DIF mechanism*. 2014 American Educational Research Association Division D Research Gala.
86. Narvaez, D., Lawrence, A., **Cheng, Y**., & Wang, L. (2013, October). Adult reports of parenting they received relates to different types of moral orientations. The 39th annual meeting of the Association for Moral Education, Montreal, Canada.
87. **Cheng, Y.** & †Shao, C. (2013, July). *The mediated MIMIC model for understanding the underlying mechanism of DIF*. 2013 APA Convention, Honolulu, HI.
88. †Shao, C., Jean-Pierre, P., **Cheng, Y.,** Paskett, E., & Fiscella, K. (2013, June). *Latent trait examination of the patient satisfaction with interpersonal relationship with navigator scale: An item response theory analysis approach*. MASCC/ISOO International Symposium on Supportive Care in Cancer. Berlin, Germany.
89. Jean-Pierre, P., **Cheng, Y.,** Patierno, S., Raich, P., … & Fiscella, K. (2013, April). *Item response theory analysis of the patient satisfaction with cancer-related care measure: Psychometric validation in a multicultural sample of 1,296 participants*. American Association for Cancer Research, Washington, DC.
90. **Cheng, Y.** (2013, April). *Detection of aberrant responses in survey data in the presence of calibration error*. National Council of Measurement in Education, San Francisco, CA.

91. †Lathrop, Q., †Shao, C., †Patton, J., & **Cheng, Y**. (2013, April). *Determining the anchor set in the detection of differential item functioning*. National Council of Measurement in Education, San Francisco, CA.
92. Narvaez, D., Gleason, T., **Cheng, Y**., Lefever, J., & Wang, L. (2013, April). *How do nurturing parenting attitudes influence moral character development and flourishing?* 2013 SRCD Biennial Meeting, Seattle, WA.
93. Heitzmann, C.A., Merluzzi, T.V., Philip, E.J., †Patton, J., & **Cheng, Y**. (2012, November). *A comprehensive methodology for assessing true differences in coping for African American patients with cancer*. International Psycho-oncology Society, Brisbane, Queensland, Australia.
94. †Shao, C., & **Cheng, Y.** (2012, October). *The mediated MIMIC model for understanding the underlying mechanism of DIF*. Ideas in Testing conference, Chicago, IL.
95. †Lathrop, Q., & **Cheng, Y**. (2012, October). *Random effect Rasch model and the two- parameter logistic model*. Ideas in Testing conference, Chicago, IL.
96. **Cheng, Y.** (2012, September) *The theoretical development and applications of computerized adaptive testing*. 2012 Cross-strait Psychometric Conference, Nanchang, China.
97. **Cheng, Y.,** & Liu, C. (2012, April). *Conceptual differences between two IRT-based decision-making approaches in testing*. 2012 meeting of NCME, Vancouver, BC.
98. †Patton, J., & **Cheng, Y**. (2012, April). *Standard error estimation in presence of calibration error*. 2012 meeting of NCME, Vancouver, BC.
99. †Lathrop, Q., & **Cheng, Y**. (2012, April). *Comparison between two IRT-based approaches in estimating classification accuracy and consistency*. 2012 meeting of NCME, Vancouver, BC.
100. †Lathrop, Q., Wang, P., & **Cheng, Y**. (2012, April). *Estimation of classification accuracy and consistency with longitudinal data*. 2012 meeting of AERA, Vancouver, BC.
101. **Cheng, Y.,** †Patton, J., & Yuan, K-H. (2011, October). *Standard error estimation in IRT ability recovery*. Innovation R&D Symposium, CTB/McGraw-Hill, Monterey, CA.
102. **Cheng, Y.,** & Liu, C. (2011, July). *Decision making in testing using IRT*. 2011 International Meeting of Psychometric Society, Hong Kong.
103. Frey, A., **Cheng, Y.,** & Seitz, N. (2011, May). *Content Balancing with the Maximum Priority Index Method in Multidimensional Adaptive Testing*. Presented at the 2011 NCME, New Orleans, LA.
104. Yao, L., Kyoto, I. & **Cheng, Y..** (2011, May). *Pre-Conference Training Workshop: An Introduction to the Application of BMIRT and LinkMIRT: Bayesian Multivariate Item Response Theory Software*. 2011 meeting of NCME, New Orleans, LA.
105. Narvaez, D., Brooks, J.A., Gleason, T., Wang, L., **Cheng, Y**., Lefever, J., & Centers for the Prevention of Child Neglect (April, 2011). *Child Outcome effects of the environment of evolutionary adaptedness: Breastfeeding experience and touch at 30 and 36 months*. 2011 Meeting of Society for Research in Child Development (SRCD), Montreal, Canada.
106. Heitzmann, C.A., †Patton, J. M., Merluzzi, T., **Cheng, Y.** (2011, April). *Identifying true differences in coping self-efficacy between African American and white cancer patients*. Paper presented at the annual meeting of the Society of Behavioral Medicine, Washington, DC.
107. Narvaez, D., Wang, L., **Cheng, Y.,** Burke, J., & Gleason, T. (November, 2010). *Symposium: Early life experience and social and moral development*. Association for Moral Education Annual Meeting, St. Louis.
108. Frey, A., **Cheng, Y.,** & Seitz, N. (2010, June). *Content Balancing with the Maximum Priority Index Method in Multidimensional Adaptive Testing*. Presented at the 2010 Annual Meeting of International Association on Computerized Adaptive Testing, Arnhem, the Netherlands.
109. **Cheng, Y.** (2010, May). *To Obtain More Precise Latent-Trait Estimates: Quantification of the Impact of Fallible Item Parameter Estimates on Latent Trait Recovery*. Presented at the 2010 Annual Meeting of the American Educational Research Association, Denver, CO.

110. **Cheng, Y.** (2010, May). *How to retain information in educational and psychological assessments relations among three reliability measures*, Presented at the 2010 Annual Meeting of the National Council on Measurement in Education, Denver, CO.
111. **Cheng, Y**. (2009, April). *Continuous/virtual a-stratification for computerized adaptive testing*. Presented at the 2009 Annual Meeting of the American Educational Research Association, San Diego, CA.
112. **Cheng, Y.** (2008, September). *Diagnostic computerized adaptive testing*. Presented at the *2008 International Conference on Outcome Measurement*, Bethesda, MD.

Formal Teaching and Student Mentorship

Master's Theses Directed

Quinn Lathrop (2014). *The impact of within-template systematic variation on response models*.

Doctoral Dissertations Directed

Alex Brodersen (2023). *TREE-link: Semi-parametric item response theory using decision and regression trees as a link function*.

Maxwell Hong (2021). *The psychometric property of text*.

Daniella Reboucas-Ju (2021). *Explanatory item response time modeling*.

Ian Campbell (2020). *Measuring subpopulation invariance in test equating with equivalence testing.* – Co-Directed

Can Shao (2016). *Aberrant response detection using change-point analysis*.

Quinn Lathrop (2015). *IRT and SVD: Implementing psychometric methods in new and complex situations*.

Jeffrey Patton (2014). *Some consequences of response time model misspecification in educational measurement*.

Courses Taught

Psychological Measurement and Test Development

Item Response Theory

Psychological Measurement

Introduction to Behavioral Statistics

Professional Memberships

American Educational Research Association

Association for Psychological Science

American Psychological Association

British Psychological Society

National Council of Measurement in Education

Psychometric Society

Society of Multivariate and Experimental Psychology

Professional Services

1. Ad-hoc Reviewer for journals:

    American Psychologist

    Applied Psychological Measurement

    Behavioral Research Methods

    British Journal of Mathematical and Statistical Psychology

    Educational and Psychological Measurement

    Educational Measurement: Issues and Practices

    Educational Assessment

    Journal of the American Statistical Association

    Journal of Educational and Behavioral Statistics

    Journal of Mathematical Psychology

    Journal of Educational Psychology

    Journal for Research in Mathematics Education

    Multivariate Behavioral Research

    Psychological Methods

    Psychometrika

    Quality of Life Research

    The Journal of Computerized Adaptive Testing

    Reviewer for conferences for most years:

    American Educational Research Association

    National Council of Measurement in Education

    International Meeting of Psychometric Society

    International Association of Computerized Adaptive Testing

American Psychological Association, Div 5 (2018)

2. Organizer, Invited symposium at the 2011 International Association of Computerized Adaptive Testing (IACAT, Sept 2011);
   Organizer, symposium at the 2013 meeting of the National Council of Measurement in Education (NCME, April 2013);
   Organizer, symposium at the 2022 meeting of the National Council of Measurement in Education (NCME, April 2022).
3. Member, Editorial Council, *Psychometric Society* (2016 – 2017);
   Chair, Editorial Council, *Psychometric Society* (2017 – 2018);
   Committee member of the Graduate Student Council (2005, 2006) of AERA Division D;
   Committee member of the Dissemination Award Committee (2007, 2008) of NCME;
   Committee member of the Significant Contribution to Educational Measurement and Research Methodology Award Committee (2011, 2012) of AERA Division D;
   Committee member, Co-Chair, Chair (2014, 2015, 2016), Bradley Hanson Award for Contributions to Educational Measurement, National Council of Measurement in Education.
   National Science Foundation DRL panel member, 2019.
   Netherlands Organization for Scientific Research, 2019
   National Science Foundation DRK-12 panel member, 2018.
   National Science Foundation DRK-12 panel member, 2016.
   National Science Foundation ECR panel member, 2015.
   National Science Foundation DRL panel member, 2014.
   National Science Foundation REESE panel member, 2010 & 2011.
   National Science Foundation SBE reviewer, 2012, 2020, 2021.
   IES Technical Working Group on Data Science Education, 2021.
4. University and Departmental service:
   Executive committee, Dept. of Psychology, 2023 – present;
   Cognitive search committee, Dept. of Psychology, Fall 2023;
   GRE committee, Dept. of Psychology, 2022 – present;
   Lucy Family Institute Steering Committee, 2021 – present;
   University Committee on Research and Sponsored Programs, 2019 – 2022;

University Online Data Science program, 2016 – 2017;

Department Executive CAP, 2015 – 2021;

Graduate Studies Committee, 2017 – 2019;

ND PIER program, Institute of Educational Initiatives, 2014 – present;

Grant committee, Department of Psychology, 2014 – 2016;

Undergraduate committee, Department of Psychology, 2009 – 2010;

Colloquium committee, Department of Psychology, 2008 – 2009.