HUA-HUA CHANG

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EDUCATION

1992	University of Illinois at Urbana-Champaign	Ph.D.	Statistics
1988	University of Illinois at Urbana-Champaign	M.S.	Statistics
1980	East China Normal University (Shanghai, China)	Diploma	Mathematics

HONORS

2008	List of Teachers Ranked as Excellent by Their Students, University of Illinois
2008	NCME Annual Tech Award, National Council on Measurement in Education
2006	2006 Public Presenter, American College Testing, Iowa City, Iowa
2005	Fulbright Senior Specialist Award, US State Department, Washington, DC
2005	Hire for Excellence, University of Illinois at Urbana-Champaign

EMPLOYMENT HISTORY

2005-	Associate Professors of Psychology, Educational Psychology, and Statistics (zero-time), University of Illinois, Urbana-Champaign, IL
2001- 2005	Associate Professor, Department of Educational Psychology, University of Texas, Austin, TX
2008-present	Guest Professor, North East Normal University, Changchun, China
2001- 2004	Guest Professor, Jiangxi Normal University, Nanchan, China
1999 –2001	Senior Pychometrician and Project Director of Computerized Testing Technological Research, National Board of Medical Examiners, Philadelphia, PA
1997- 1998	Associate Professor, Department of Educational Psychology, The Chinese University of Hong Kong, Hong Kong
1992-1999	Research Scientist, Large Scale Assessment, Division of Statistics and Psychometrics Research, Educational Testing Service, Princeton, NJ

RESEARCH GRANTS

AWARDED

1/2009-1/2010	*Principal Investigator* Funding Agency: CTB/McGraw Hill Proposal Title: Combing CAT with Cognitive Diagnosis	$62,344

5/2008-5/2013	*Co-Principal Investigator* (PI: Katherine Ryan). Funding Agency: Illinois State Board of Education Proposal Title: External Review of the ISBE Large Scale Assessment and Accountability System	$1,250,000
2/2006-6/2007	*Principal Investigator* Funding Agency: National Science Foundation	$21,950
3/2003-6/2005	*Principal Investigator* Funding Agency: National Science Foundation Proposal Title: Improving Computerized Adaptive Testing In the United States.	$180,000
7/2004-6/2005	*Principal Investigator* Funding Agency: College Board Proposal Title: Cognitive Diagnostic Research.	$120,000
6/2002-6/2004	*Principal Investigator* Funding Agency: US Department of Education Proposal Title: Improving the DIF Detection Procedures for NAEP Data Analysis.	$77,943

GRANTS AWARDED FOR STUDENTS

8/2005-8/2006	Graduate Student Research Grant from the College Board (Ying Cheng). $23,500
8/2004-8/2005	Graduate Student Research Grant from the College Board (Ying Cheng). $23,000
4/2003-8/2004	Graduate Students Research Grants from Educational Testing Service. $12,000

UNDER REVIEW	*Principal Investigator* Funding Agency: Institute of Educational Sciences Proposal Title: Building CAT-Driven Assessment and Diagnosis to Improve Student Learning
RECENTLY REJECTED (Panel recommendation: Fund with median Priority)	*Principal Investigator* NSF, Division of Social & Economic Sciences (Program: Methods, Measurement & Statistics) Funding Agency: National Science Foundation Proposal Title: Making Computerized Adaptive Testing More Reliable
UNDER REVISION	*Principal Investigator* Funding Agency: NIH Proposal Title: Patient-Reported Geriatric Depression Outcomes: CAT, DIF, & Longitudinal Analysis
IN PREPARATION	*Co-PI (UIUC Confucius Institute Planning Committee.)* Funding Agency: The Office of Chinese Language Council International, Beijing China Proposal Title: Establishing a Confucius Institute at UIUC

PUBLICATIONS

PEER REVIEWED (SELECTED)

1. Chang, H., & Ying, Z. (2009). Nonlinear sequential designs for logistic item response theory models with applications to computerized adaptive tests. *The Annuals of Statistics*, Vol 37, No. 3, 1466-1488.
2. 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*, 69, 35-49.
3. Cheng, Y., Chang, H., Douglas, J., & Guo, F., (2009). Constraint-weighted a-stratification for computerized adaptive testing with non-psychometric constraints: balancing measurement efficiency and exposure control. *Educational and Psychological Measurement, 69,* 35-49.

4. Yi, Q., Zhang, J., & Chang, H. (2008). Severity of organized item theft in computerized adaptive testing: A Simulation study. *Applied Psychological Measurement, 32 (7),* 543-558.

5. Chang, H., & Ying, Z. (2008). To weight or not to weight? Balancing influence of initial items in adaptive testing. *Psychometrika, 73 (3),* 441-450.

6. McGlohen, M. & Chang, H. (2008). Combining computer adaptive testing technology with cognitively diagnostic assessment. *Behavior Research Methods 40 (3),* 808-821.

7. Cheng, Y., Chang, H., & Yi., Q., (2007). Two-phase item selection procedure for flexible content balancing in CAT. *Applied Psychological Measurement, 31*(6)*,* 467-482.

8. Yi, Q., Zhang, J., & Chang, H. (2006). Assessing CAT test security severity. *Applied Psychological Measurement, 30*(1)*, 62-63.*

9. Leung, C., Chang, H., & Hau, K. (2005). Computerized adaptive testing: A mixture item selection approach for constrained situations. *British Journal of Mathematical and Statistical Psychology, 58,* 239-257.

10. Chang, H., & Cheng, Y. (2005). *The new developments and future research direction in computerized adaptive testing*, part 2. *Testing Research* (Chinese with English Abstract)*, 1*(2), 24-43.

11. Chang, H., & Cheng, Y. (2005). *The new developments and future research direction in computerized adaptive testing*, part 1. *Testing Research* (Chinese with English Abstract) *1*(1), *12-24*.

12. Yi, Q., & Chang, H. (2003). a-Stratified CAT design with content blocking. *British Journal of Mathematical and Statistical Psychology, 56*, 359-378.

13. van der Linden, W. J., & Chang, H. (2003). Implementing content constraints in Alpha-Stratified adaptive testing using a shadow test approach. *Applied Psychological Measurement, 27*(2), 107-120.

14. Leung, C., Chang, H., & Hau, K. (2003). Computerized adaptive testing: A comparison of three content balancing methods. *The Journal of Technology, Learning, and Assessment*, *2*(5)*,* 2-15.

15. Leung, C., Chang, H., & Hau, K. (2003). Incorporation of content balancing requirements in stratification designs for computerized adaptive testing. *Educational and Psychological Measurement, 63*(2), 257-270.

16. Chang, H., & van der Linden, W. J. (2003). Optimal stratification of item pools in *a*-stratified computerized adaptive testing. *Applied Psychological Measurement, 27*(4), 262-274.

17. Pastor, D., Dodd, B., & Chang, H. (2002). A comparison of item selection techniques and exposure control mechanisms in CATs using the generalized partial credit model. *Applied Psychological Measurement, 26*(2), 147-163.

18. Leung, C., Chang, H., & Hau, K. (2002). Item selection in computerized adaptive testing: Improving the *a*-stratified design with Sympson-Hetter algorithm. *Applied Psychological Measurement, 26*(4), 376-392.

19. Chang, H., & Zhang, J. (2002). Hypergeometric family and item overlap rates in computerized adaptive testing. *Psychometrika, 67*(3), 387-398.

20. Chang, H. (2002). Some issues in the designs of item selection algorithm for computerized adaptive testing. *Testing Research* (Chinese with English Abstract), *2*, 35-39.

21. Leung, C., Chang, H., & Hau, K. (2001, March). Making a-stratified computerized adaptive testing design more practical: Imposing non-statistical constraints. *Global Chinese Journal on Computers in Education, 1*(1). Retrieved March 28, 2008 from http://www.fed.cuhk.edu.hk/GCJCE/gcjce04/gcjce04.html

22. Hau, K., & Chang, H. (2001). Item selection in computerized adaptive testing: Should more discriminating items be used first? *Journal of Educational Measurement, 38*(3), 249-266.

23. Chang, H., Qian, J., & Ying, Z. (2001). a-Stratified multistage Computerized Adaptive Testing with *b* blocking. *Applied Psychological Measurement, 25*(4), 333-341.

24. Bickel, P., Buyske, S., Chang, H., & Ying, Z. (2001). On maximizing item information and matching difficulty with ability. *Psychometrika, 66*(1), 69-77.

25. Mislevy, R., & Chang, H. (2000). Does adaptive testing violate local independence? *Psychometrika, 65*(2), 149-156.

26. Chang, H., & Ying, Z. (1999). *a*-Stratified multistage computerized adaptive testing. *Applied Psychological Measurement, 23*(3), 211-222.

27. Chen, S., Ankenmann, R., & Chang, H. (2000). A comparison of item selection rules at the early stages of computerized adaptive testing. *Applied Psychological Measurement, 24*(3), 241-255.

28. Chang, H., & Ying, Z. (1996). A global information approach to computerized adaptive testing. *Applied Psychological Measurement, 20*(3), 213-229.

29. Chang, H., Mazzeo, J., & Roussos, L. (1996). Detecting DIF for polytomously scored items: An adaptation of the SIBTEST procedure. *Journal of Educational Measurement, 33*(3), 333-353.

30. Chang, H. (1996). The asymptotic posterior normality of the latent trait for polytomous IRT models. *Psychometrika, 61*(3), 445-453.

31. Chang, H., & Mazzeo, J. (1994). The unique correspondence of item response function and item category response functions in polytomously scored item response models. *Psychometrika, 59(3)*, 391-404.

32. Chang, H., & Stout, W. (1993). The asymptotic posterior normality of the latent trait in an IRT model. *Psychometrika, 58*(1), 37-52.

33. Stout, W., Nandakumar, R., Junker, B., Chang, H., & Steidinger, D. (1992). DIMTEST: A Fortran program for assessing dimensionality of binary item responses. *Applied Psychological Measurement, 16*, 236.

PAPERS UNDER REVIEW

1. Deng, H., Ansley, T., & Chang, H. (revised and resubmitted). An investigation of stratified and maximum information item selection procedures in CAT. *Journal of Educational Measurement*

2. Chen, P. & Chang, H. (Under review). A statistical perspective of IRT-based automated test assembly: the cell and cube method.

3. Cheng, Y., Chang, H., & Budescu, D. (Under revision for resubmission). The maximum dual information method for item selection in cognitive diagnostic computerized adaptive testing. *Journal of Educational and Behavioral Statistics.*

4. Cheng, Y., & Chang, H. (Under review). Improving cognitive diagnostic computerized adaptive testing by balancing attribute coverage. *International Journal of Learning Technology: Special Issue on Assessment in e-Learning.*

5. McGlohen, M., Miller, E., & Chang, H. (under review). Complemental diagnostic testing in large-scale assessment. *British Journal of Mathematical and Statistical Psychology*.

BOOK CHAPTER (PEER REVIEWED)

1. Chang, H. (2004). *Understanding Computerized Adaptive Testing – From Rabins-Moron to Lord, and beyond.* In Kaplan, D. (Ed.) *The sage handbook of quantitative methods for the social sciences* (pp. 117-133), Sage Publications, Thousand Oaks, CA.

2. Chang, H. & Ying, Z. (2006). *Computerized Adaptive testing.* In Salkind, N. (Ed.) *The Sage Encyclopedia of Measurement and Statistics* (pp. 170-174). Sage Publications, Thousand Oaks, CA.

3. Chang, H. (2007). Book review: Wim J. van der Linden's linear models for optimal test design. *Psychometrika, 72,* 279-281.

4. Chang, H. (2008). *Psychometrics*. In Darity, W. (Ed.) *International Encyclopedia of The Social Sciences, 2nd Edition 9 Vols.* (6 vol, pp. 587-590). Macmillan Reference USA, Detroit, MI.

TECHNICAL REPORTS

1. Yi, Q., Zhang, J., & Chang, H. (2006). Severity of organized item theft in computerized adaptive testing: An empirical study (ETS Research Rep. RR-06-22). Princeton, NJ: Educational Testing Service.

2. Zhang, J., & Chang, H. (2005). *The effectiveness of enhancing test security by using multiple item pools* (ETS Research Rep. RR-05-19). Princeton, NJ: Educational Testing Service.

3. van der Linden, W. J., & Chang, H. (2005). *Implementing content constraints in alpha-stratified adaptive testing using a shadow test approach* (LSAC Computerized Testing Report 01-09). Newtown, PA: Law School Admission Council.

4. Qian, J., Chang, H., Kaplan, B., Liang, J-L., & Lim, Y-H. (2001). Data analysis of the state writing assessment. In N. Allen (Ed.), *The NAEP 1998 Tech. Rep. 381-398*. Washington, DC: National Center for Education Statistics.

5. Jenkins, F., Qian, J., Chang, H., & Kaplan, B. (2001). Introduction to the data analysis for the national and state

writing samples. In N. Allen (Ed.), *The NAEP 1998 Tech. Rep. 359-370*. Washington, DC: National Center for Education Statistics.

6. Mislevy, R., & Chang, H. (1998). *Does adaptive testing violate local independence?* (Research Rep. 98-33). Princeton, NJ: Educational Testing Service.
7. Chang, H., & Jenkins, F. (1998). *Data analysis and scaling for the 1996 assessment in mathematics* (NAEP 1996 Tech. Rep.). Washington, DC: National Center for Education Statistics.
8. Chang, H. (1996). Data analysis for the 1994 long-term trend reading. In E. Johnson & J. Carlson (Eds.), *The NAEP 1994 technical report.* Washington, DC: National Center for Education Statistics. Allen, N., Chang, H., & Swinton, S. (1996). *Data analysis and scaling for the 1994 Puerto Rico mathematics and science* (1994 Puerto Rico educational assessment Tech. Rep.). Washington, DC: National Center for Education Statistics.
9. Chang, H., Mazzeo J., & Roussos, L. (1995). *Detect DIF for polytomously scored items: An adaptation of Shealy-Stouts' SIBTEST procedure* (ETS Research Rep. 95-5). Princeton, NJ: Educational Testing Service.
10. Mazzeo, J., Chang, H., Kulick, E., Fong, Y. F., & Grima, A. (1993). Data analysis and scaling for the 1992 trial state assessment in mathematics. In E. Johnson, J. Mazzeo, & D. Kline (Eds.), *Technical report of the NAEP 1992 trial state assessment program in mathematics.* Washington, DC: National Center for Education Statistics.
11. Chang, H., & Mazzeo, J. (1993). *The unique correspondence of item response function and item category response functions in polytomously scored item response models* (ETS Research Rep. 93-53). Princeton, NJ: Educational Testing Service.
12. Chang, H., & Stout, W. F. (1991). *The asymptotic posterior normality of the latent trait in an IRT model* (ONR Research Rep. 91-4). Urbana: University of Illinois, Department of Statistics.

PRESENTATIONS

INVITED PRESENTATIONS (Selected)

1. 1991 International Educational Statistics and Measurement Symposium (invited speaker), Tainan Teachers College, Tainan, Taiwan, April 1991.
2. Educational Testing Service, Princeton, NJ, August 1991.
3. College of Educational Sciences, East China Normal University (3-day lecture series), Shanghai, China, December 1993.
4. The Eleventh Item Response Theory Workshop (Keynote speaker), the University of Twente, Enscheste, The Netherlands, November 1995.
5. Law School Admission Council, Newtown, Pennsylvania, November 1995.
6. "Prime time radio calling show" (in Chinese), the Voice of America, US Information Agency, Washington, D.C., March 8, 1996.
7. Department of Statistics, University of Illinois at Urbana-Champaign, Champaign, IL, November 8, 1996.
8. Department of Psychology, Beijing Normal University, Beijing, China, Aug. 1997.
9. The 7-th Annual Meeting of Educational Statistics and Measurement of China (Keynote speaker), Ganzhou, Jiangxi, China, Oct. 1997.
10. Examination Authority of Hong Kong, Hong Kong, Nov. 7, Dec., 4 1997 and Feb. 5 1998.
11. Graduate School of Education, University of California, Berkeley, CA, April 1998.
12. Department of Educational Psychology, Jiangxi Normal University, Nanchan, China, Jan. 1998.
13. Department of Educational Psychology, Nanjin Normal University, Nanjin, China, Jan. 1998.
14. Department of Educational Psychology, University of Wisconsin, Madison, Wisconsin, February 1998.
15. Department of Psychology, Beijing Normal University, Beijing, China, May 11-18, 1998.
16. Department of Psychology, East China Normal University, Shanghai, China, May 1998.
17. Examination Authority of Hong Kong, Hong Kong, June 1998.
18. Hong Kong Department of Education, Hong Kong, June 1998.

19. Law School Admission Council, Newtown, Pennsylvania, October 1998.
20. Law School Admission Council, Newtown, Pennsylvania, Feb. 1999.
21. National Board of Medical Examiners, Philadelphia, PA, Jan. 8, 1999.
22. Department of Measurement, Statistics and Evaluation, University of Maryland, College Park, MD, March 11, 1999.
23. School of Education, University of Michigan, Ann Arbor, MI, March 15, 1999.
24. Department of Psychology, University of Michigan, Ann Arbor, MI, March 16, 1999.
25. Department of Educational Psychology, University of Minnesota, Twincity, MN, March 30, 1999.
26. College of Education, Jianxi Normal University, Nanchan, China, March 21, 2000.
27. Ministry of Health, P.R. China, Beijing, China, March 17, 2000.
28. College of Education, Jianxi Normal University, Nanchan, China, December 2001.
29. Tianjin Educational Examinations Authority, Tianjin, China, December 2001.
30. "*Item selection and sequential design in CAT*", Department of Statistics, University of Illinois, Urbana-Champaign, IL, April 2002
31. "*Making assessment the number 1 priority in China*", Shanghai Municipal Educational Examinations Authority, Shanghai, China, December 2002.
32. "*New trends of testing and assessment in the US*", Tianjin Educational Examinations Authority, Tianjin, China, December 2002.
33. "*Is external linking a solution?*" Educational Examinations Authority of P.R China, Beijing, China, December 2002.
34. "*Performance assessment in standardized assessment*", Examination Center of Ministry of HR, P.R. China, Beijing, China, December 2002.
35. "*New trends of testing and assessment in the US*", Department of Information and Educational Technology, East China Normal University, December 2002.
36. *"Some theoretical issues in IRT model estimation"*, Department of Statistics, East China Normal University, Shanghai, China, December 2002.
37. *"New trends of psychometric development in the US",* Department of Psychology, Beijing Normal University, Beijing, China, December 2002.
38. *"New trends of psychometric development in the US",* Department of Psychology, Peking University, Beijing, China, December 2002.
39. "*Computer case simulation in medical licensure examinations",* School of Basic Medical Sciences, The 2nd Military Medical University, Shanghai, China, December 2002.
40. *"Computerized adaptive testing, where is the future?",* Educational Testing Service, Princeton, NJ, July 28, 2003.
41. *"Some practical issues in computerized assessment",* Baylor College of Medicine, Houston, TX, November 13, 2003.
42. Harcourt Educational Measurement, San Antonio, TX, August 2004
43. *"Computerized testing, E-rater, and generic algorithm: Psychometrics to support emerging technologies"*, Invited Symposium, the 28th International Congress of Psychology, Beijing, China, August 8-13, 2004.
44. "*New directions in computerized adaptive testing*", School of Education, University of Michigan, Ann Arbor, MI, January 2005.
45. *"The new developments in CAT",* Departments of Educational Psychology and Psychology, University of Illinois, Urbana-Champaign, IL, February 2005.
46. *"The new developments in CAT",* Department of Applied psychology, New York University, New York, NY, February 2005.
47. *"Efficient computer adaptive assessment in patient-reported disease outcomes",* Survey Research Center, University of Michigan, Ann Arbor, MI, March 17, 2005
48. *Item selection in computerized adaptive testing, from Robbins-Monro to Lord and beyond*, Department of Statistics, University of Michigan, Ann Arbor, MI, March 18, 2005

49. *"Statistical approaches in automated scoring in computer case simulations",* National Medical Examination Center, Beijing, China, November 2005

50. "*Issues of scoring in performance-based assessment*", Testing Center of Labor Ministry, Beijing, China, November, 2005.

51. "Computerized adaptive testing vs. computerized linear tests, which one is more suitable in large scale assessment?", School of Psychological Sciences, Beijing Normal University, Beijing, China, November 2005.

52. *"New developments in large scale educational assessment"*, Beijing Municipal Educational Examination Authority, Beijing, China, November 2005.

53. *"Why the results of the college entrance examination can not be used for the nation's report card",* Shanghai Municipal Educational Examination Authority, Shanghai, China, November 2005.

54. *"Item banking, equating, and parameter estimation, how can we combine the applications?",* Beijing Language and Culture University, Beijing, China, November 2005.

55. "*Joining diagnostic assessment with large-scale standardized testing",* Department of Psychology, Shanghai Normal University, Shanghai, China, December 14, 2006.

56. "*Joining diagnostic assessment with large-scale standardized testing",* College of Education, Jianxi Normal University, Nanchan, China, December 17, 2006

57. "*Joining diagnostic assessment with computerized adaptive testing",* Department of Psychology, Peking University, Beijing, China, December 7, 2006

58. "*Sampling and stratification: An alternative for automatic assembling multiple forms*", Invited Speech as the 2006 Public Presenter, American College Testing, Iowa City, Iowa, October 26, 2006.

59. "*Paper & pencil, IBT, or CAT? Which is more suitable for HSK?*" Beijing Language and Cultural University, Beijing, China, July 2007.

60. "*Test security in large scale assessment: Problems and countmeasures*", Keynote speech at the National Conference on Test Security in Medical Licensure Examinations, Urumqi, China, August 10-13, 2007.

61. "*Increasing security while retaining efficiency in CAT: How can we achieve our goal?*" invited paper presented at the *72nd Annual Meeting of the Psychometric Society*, July 9-13, 2007, Tokyo, Japan.

62. "*Computerized adaptive testing: virtues and vices*", invited paper presented at the *2007 Pacific Rim Objective Measurement Symposium*, Taipei, Taiwan, July 17-19, 2007.

63. "*Toward a reinvented future for large scale formative assessment*", Keynote speech at the *National Conference of Curriculum Reform*, Shanghai, China, April, 2008.

64. "*Are you ready to take the challenge with your quantitative skills?*" invited presentation, School of Psychology, Beijing Normal University, Beijing, China, December 22, 2008.

CONFERENCE PRESENTATIONS

From 1990 to 2001

- 12 paper presentations at the annual meetings of the Psychometric Society from 1993 to 2001.
- 17 paper presentations at the annual meetings of American Educational Research Association from 1991 to 2001.
- 16 paper presentations at the annual meetings of National Council on Measurement in Education from 1991 to 2001
- 3 paper presentations at the Joint Statistical Meetings from 1997 to 2001
- 1 paper presentation at the Third International Chinese Statistical Conference in 1996
- 1 paper presentation at 1998 Chinese International Conference of Computer in Education
- 4 presentations at ETS' Joint Statistics and Psychometrics Seminars from 1993 to 1999.
- 2 presentations at 1990 and 1991 ONR Contractor's Meetings on Model-Based Measurement.

From 2002 to current

1. Chang, H. (2002, April). *CAT—Item Exposure Control and Ability Estimation*. Paper presented at the annual meeting of the American Educational Association, New Orleans, LA.

2. Chang, H., & Ying, Z. (2002, April). *To weight or not to weight? Balancing influence of initial and later items in CAT*. Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.

3. Chang, H., & Zhang, J. (2002, April). *Identify the Lower Bounds for Item Sharing and Item Pooling in Computerized Adaptive Testing*. Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.

4. Leung, C. K., Hau, T. K., & Chang, H. (2002, April). *Comparing three item selection approaches for computerized adaptive testing with content balancing requirement.* Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.

5. Chang, H., & Ying, Z. (2003, April). *Test-Score Compatibility, Ability Estimation, and Item-Exposure Rate Control in Computerized Adaptive Testing.* Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

6. Chang, H., & Zhang, J. (2003, April). *Assessing CAT Security Breaches by the Item Pooling Index --- to compromise a CAT item bank, how many thieves are needed?* Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

7. Leung, C. K., Hau, T. K., & Chang, H. (2003, April). *Computerized Adaptive Testing: A Comparison of Three Content Balancing Methods*. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

8. Xu, X., Chang, H., & Douglas, J. (2003, April). *A simulation study to compare CAT strategies for cognitive diagnoses*. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

9. Chang, H., Qian, J., Chen, P., & Cheng, Y. (2004, June). *Adjustment of BIB data for DIF Testing*. Paper presented at the International meeting of the Psychometric Society, Pacific Grove, CA.

10. Cheng, Y., Chang, H., & Yi, Q. (2004, June). *Two-phase item selection with realistic content balancing constraints in computerized adaptive testing.* Paper presented at the 2004 International Meeting of the Psychometric Society, June 14-17, 2004, Pacific Grove, CA.

11. McGlohen, M., Chang, H., & Miller, E. (April, 2004). *Joining Diagnostic Assessment with Large-Scale Standardized Testing,* paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

12. McGlohen, M., Chang, H., & Wills, J. (April, 2004). *Combining computer adaptive testing technology with cognitively diagnostic assessment*, paper presented at the annual meeting of the National Council on Measurement in Education, San Diego, CA.

13. Chang, H., & Zhang, J. (2005, April). *Rescuing CAT by fixing the problems.* Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

14. Chen, P-H., & Chang, H. (2005. April) *Automated test assembly for multiple test forms by two item pool stratification models*. Paper presented at the annual meeting of the National Council on Measurement in Education, April 11-14, 2005, Montreal, Canada.

15. Chen, P-H., & Chang, H. (2005, April). *Balanced incomplete block data adjustment for NAEP DIF testing.* Paper presented at the annual meeting of the American Educational Research Association, April 11-15, 2005, Montreal, Canada.

16. Cheng, Y., & Chang, H. (2005, April). *Customized a-stratification in CAT: How many strata to use?* Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

17. Cheng, Y., & Chang, H. (2005, April). *Two-phase item selection procedure for flexible content balancing in CAT*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

18. Kim, S., & Chang, H. (2005, April). *Automated test assembly for cognitive diagnostic tests.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

19. Yi, Q, Zhang, J., & Chang, H. (2005, April). *Identifying Practical Indices for Enhancing Item Pool Security.* Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

20. Ying, Z., *&* Chang, H. (2005, April). *Modeling response latencies for computerized adaptive tests.* Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

21. Zhang, J., & Chang, H. (2005, April). *The effectiveness of using multiple item pools or linear form tests in enhancing test security.* Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

22. Chang, H. (2006, April). *K4 – Issues in Reliability*. Paper discussed at the annual meeting of the National Council on Measurement in Education, San Francisco.

23. Chang, H., & Ying, Z. (2006, August). *Making item selection more efficient in computerized adaptive testing*. Paper presented at the Joint Statistical Meeting, Seattle, WA

24. Chen, P., & Chang, H. (2006, April). *A statistical perspective of IRT-based automated test assembly: the cell and cube methods.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

25. Cheng, Y., Chang, H., & Wang, X. (2006, April). *Constraints-weighted information method for item selection of severely constrained computerized adaptive testing*. Paper presented at the Annual Meeting of the National Council on Measurement in Education, San Francisco.

26. Lin, H., Din., S., & Chang, H. (2006. April). *Computerized adaptive testing for cognitive diagnosis.* Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco.

27. Yi, Q., Zhang, J., & Chang, H. (2006, April). *An empirical study on effectiveness of using item pools in CAT.* Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco.

28. Chang, H. (2007, April). *K5 – Ability and Parameter Estimation*. Paper discussed at the annual meeting of the National Council on Measurement in Education, Chicago.

29. Chang, H. (2007, April). *Should we use "recycled" items in cat?* Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

30. Cheng, Y., & Chang, H (2007, April). *Dual information method in cognitive diagnostic computerized adaptive testing.* Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

31. Cheng, Y., & Chang, H. (2007, July). *The "selection and allocation" method for automated test assembly.* Paper presented at the annual meeting of the Psychometric Society, Tokyo.

32. Cheng, Y., & Chang, H. (2007, April). *Two item selection methods in computerized adaptive testing for cognitive diagnosis.* Paper presented at the annual meeting of the American Educational Research Association, Chicago.

33. Yi, Q., Jinming Zhang, J., & Chang, H. (2007, April). *The effects of item pool size on the severity of possible test security violation in CAT.* Paper presented at the annual meeting of the American Educational Research Association, Chicago.

34. Yi, Q., Jinming Zhang, J., & Chang, H. (2007, April). *Improving cat test security by using an adjusted-pool approach*. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

35. Zhang , J., & Chang, H. (2007, April). *Theoretically comparing single-pool and multiple-pool designs regarding test security*. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago.

36. Cheng, Y., & Chang, H. (2008, March). *A new heuristic for parallel form assembly based on information curve matching.* Paper presented at the annual meeting of the National Council on Measurement in Education, New York.

37. Dai, D., & Chang, H. (2008, March). *Cognitively based assessment design and analysis: substantive applications.* Paper presented at the annual meeting of the American Educational Research Association, New York.

38. Ahmed, U. & Chang, H. *The Impact of Item Selection Method in CAT-DIF Analysis*, Paper presented at the 73rd Annual Meeting of the Psychometric Society Meeting, June 29- July 2, 2008, Durham, NH.

39. Wang, C. & Chang, H. *Continuous α-stratification index for computerized item selection*, Paper presented at the 73rd Annual Meeting of the Psychometric Society, June 29 to July 2, 2008, Durham, NH.

40. Chang, H., Ryan, K., Ali, U., & Wang, C. (2009, April). *Building effective CATs based existing state assessment infrastructure,* Paper presented at the annual meeting of National Council on Measurement in Education, San Diego, CA.

41. Liu, H, Ding, S, & Chang, H. (2009, April). *Developing cognitive diagnostic CAT for Chinese K-12 education: An innovative assessment for improving student learning*, Paper presented at the annual meeting of National Council on Measurement in Education, San Diego, CA.

42. Wang, C., & Chang, H. (2009, April). *Determining appropriate test length for linear test: Stratified forward selection method*, Paper presented at the annual meeting of National Council on Measurement in Education, San Diego, CA.

43. Ali, U, & Chang, H. (2009). The *equi-percentile matching-grouping method for Mantel-Haenszel-based DIF detection in CAT setting*, Paper presented at the annual meeting of National Council on Measurement in Education, San Diego, CA.

TEACHING

Courses Taught at the Chinese University of Hong Kong (1997-1998)

1. Learning Theory (100 undergraduate students)
2. Educational Measurement & Evaluation (20 graduate students)

Courses Taught at UT-Austin (2001-2005)

1. Measurement & Evaluation
2. Item Response Theory
3. Correlation & Regression
4. Introduction to Statistics
5. Multivariate Analysis

Courses at UIUC (Since Jan. 2006)

1. Theories of Measurement I
2. Theories of Measurement II
3. Measurement & Test Development Lab.
4. Hierarchical Linear Models,
5. Computerized Adaptive Testing

PROFESSIONAL SERVICE

Editorial:

Since 2004	*The American Statistician*	Associate Editor
Since 2002	*Journal of Educational and Behavior Statistics*	Editorial Board Member
Since 2004	*Applied Psychological Measurement*	Editorial Board Member
Since 2005	*Educational Measurement: Issues and Practice*	Editorial Board Member

Manuscript Reviewer:

The American Statistician
Applied Psychological Measurement
British Journal of Mathematical and Statistical Psychology
ETS Research Report Series
Journal of Behavioral and Educational Statistics
Journal of Educational Measurement
Psychometrika
Statistics Sinica

Consultant:

2009 May	*Issues in Medical Licensure Examinations,* National Board of Osteopathic Medical Examiners, Inc. Chicago, IL.
2009 March	*Advanced Training in Item Response Theory*, Ministry of Education of Singapore.
2008	*Obtaining reliable diagnostic information through constrained CAT,* Graduate Management Admission Council, McLean, VA 2000-2003.
2007	*Constraint Weighted a-stratification for computerized adaptive testing,* Graduate Management Admission Council, McLean, VA 2000-2003.
2007	*Issues in Computerized State Assessment,* Center for Educational Testing and Evaluation, University of Kansas, Lawrence, KS
2005	*Issues in Medical Licensure Examinations,* National Board of Osteopathic Medical Examiners, Inc. Chicago, IL.
2004-2005	*Cognitive Diagnostic Research,* College Board, New York, NY
1003-2005	*External Cognitive Diagnostic Research Team,* Educational Testing Service, Princeton, NJ
2001-2003	*Test Forms Reviewer,* Harcourt Educational Measurement, San Antonio, TX

Memberships in Professional Societies:

Since 1991 *American Statistical Association*
Since 1991 *American Educational Research Association*
Since 1991 *National Council on Measurement in Education*
Since 1991 *Psychometric Society*

Professional Service:

Served as special emphasis panel member at National Institute of Mental Health (four times since 2001)

Proposal Reviewer:

American Educational and Research Association
National Council on Measurement in Education

Grant proposal reviewer:

National Science Foundation
National Institute of Mental Health
University of Texas Research Programs
Educational Testing Service Post Doctorial Fellowship Grant Program
Edward J. Stemmler Medical Education Research Fund
National Medical Examination Center (China)
National Research Funding Competition (Chile)

ACADEMIC SERVICE:

2001 ~ 2005
Graduate Studies Committee for Master's in Statistics Program, UT-Austin
Graduate Studies Committee for Foreign Language Education, UT-Austin
Graduate Studies Committee for Educational Psychology, UT-Austin

2005 ~ 2007 Internationalization Committee, College of Education, UIUC
2006 ~ 2007 Undergraduate Committee, Dept. of Psychology, UIUC
2006 ~ 2008 Chair, Student Award Committee, Educational Psychology, UIUC
2005 ~ 2008 Student Award Committee, College of Education, UIUC
2007 ~ 2008 Preparation Committee, Confucius Institute of UIUC
2007 ~ 2008 Division Chair, Quantitative & Evaluation Research, Educational Psychology, UIUC
2008 ~ Planning Committee, Confucius Institute of UIUC
2007 ~ LAS Council on General Education, UIUC
2008 ~ Search Committee, Educational Psychology, UIUC
2008 ~ Search Committee, Psychology, UIUC
2008 ~ Chair, Quantitative Specialization, College of Education, UIUC

Member, PhD Research Committee:

2003 Mohammad Adnan Alghorani (committee member)
2003 Aimee Boyd (committee member)
2004 Laurie Davis (committee member)
2004 Soojin Kim (advisor)
2004 Meghan McGlohen (advisor)
2004 Xuili Xu (committee member)
2005 Pei-Hua Chen (advisor)
2005 TK Young (advisor)
2006 Lixiong Gu (committee member)
2007 Megan Mayberry (committee member)
2007 Jay Verkuilen (committee member)
2007 Rongchun Zhu (committee member)
2008 Ying Cheng (advisor)
2008 Enyoung Lim (advisor)
2008 Minhee Seo (advisor)
2008 Ying Liu (chair)

2008 Yan Huo (advisor)
2008 Cha-Yi Chui (committee member)
2008 Hui-Jeong Woo (committee member)
2008 Jorja Jamison (committee member)
2008 Jeanette Reinhardt (committee member)
2008 Diana Wang (committee member)
2008 Ben-Roy Do (committee member)
2008 Ivanete M Araldi Maciente (committee member)
2008 Yang Gao (committee member)