

## HOK CHIO (MARK) LAI

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Google Scholar profile: <https://scholar.google.com/citations?user=s2LhwXAAAAAJ>

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### EDUCATION

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Ph.D. in Educational Psychology 2011–2015  
*Texas A&M University*, College Station, TX

Bachelor of Social Science in Psychology 2007–2011  
*University of Macau*, Macau

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### PROFESSIONAL APPOINTMENTS

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Assistant Professor (Tenure-Track) 2018 Aug–  
Department of Psychology, *University of Southern California*, Los Angeles, CA

Assistant Professor (Tenure-Track) 2015 Aug–2018 Aug  
School of Education, *University of Cincinnati*, Cincinnati, OH

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### RESEARCH INTERESTS

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Effect size calculation for multilevel data  
Robust methods for multilevel modeling  
Multilevel structural equation modeling  
Growth modeling of complex longitudinal data  
Measurement invariance and its impact on statistical modeling

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### PUBLICATIONS

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(\* indicates student author)

#### Methodological/Quantitative Related Journal Publications

29. **Lai, M. H. C.**, Richardson, G. B., & Mak, H. W. (accepted). Quantifying the impact of partial measurement invariance for addiction research. *Addictive Behaviors*. Manuscript accepted for publication. <https://doi.org/10.1016/j.addbeh.2018.11.029>

28. Chio, F. H. N., **Lai, M. H. C.**, & Mak, W. W. S. (2018). Development of Nonattachment Scale—Short Form (NAS-SF) using item response theory. *Mindfulness*, 9, 1299–1308. <https://doi.org/10.1007/s12671-017-0874-z>

27. \*Chen, C.-C., Richardson, G. B., **Lai, M. H. C.**, Dai, C.-L., & Hays, D. (2018). Development and Cross-Cultural Validity of a Brief Measure of Separation-Individuation. *Journal of Child and Family Studies*, 27, 2797–2810. <https://doi.org/10.1007/s10826-018-1140-2>
26. \*Hsiao, Y., Kwok, O., & **Lai, M. H. C.** (2018). Evaluation of two methods for modeling measurement errors when testing interaction effects with observed composite scores. *Educational and Psychological Measurement*, 78, 181–202. <https://doi.org/10.1177/0013164416679877>
25. \*Hsiao, Y., & **Lai, M. H. C.** (2018). The impact of partial measurement invariance on testing moderation for single and multi-level data. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.00740>
24. Kwok, O., **Lai, M. H. C.**, Tong, F., Lara-Alecio, R., Irby, B. J., Yoon, M., & Yeh, Y.-C. (2018). Analyzing Complex Longitudinal Data in Educational Research: A Demonstration With Project English Language and Literacy Acquisition (ELLA) Data Using xxM. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.00790>
23. **Lai, M. H. C.**, Kwok, O., \*Hsiao, Y., & Qian, C. (2018). Finite population correction for two-level hierarchical linear modeling. *Psychological Methods*, 23, 94–112. <https://doi.org/10.1037/met0000137>
22. Yoon, M., & **Lai, M. H. C.** (2018). Testing factorial invariance with unbalanced samples. *Structural Equation Modeling: A Multidisciplinary Journal*, 25, 201–213. <https://doi.org/10.1080/10705511.2017.1387859>
21. **Lai, M. H. C.**, & \*Zhang, J. (2017). Evaluating fit indices for multivariate *t*-based structural equation modeling with data contamination. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.01286>
20. **Lai, M. H. C.**, Kwok, O., Yoon, M., & \*Hsiao, Y. (2017). Understanding the impact of partial factorial invariance on selection accuracy: An R script. *Structural Equation Modeling: A Multidisciplinary Journal*, 24, 783–799. <https://doi.org/10.1080/10705511.2017.1318703>
19. Kim, M., Kwok, O., Yoon, M., Willson, V. L., & **Lai, M. H. C.** (2016). Specification search for identifying the correct mean trajectory in polynomial latent growth models. *Journal of Experimental Education*, 84, 307–329. <https://doi.org/10.1080/00220973.2014.984831>
18. **Lai, M. H. C.**, & Kwok, O. (2016). Estimating standardized effect sizes for two-and three-level partially nested data. *Multivariate Behavioral Research*, 51, 740–756. <https://doi.org/10.1080/00273171.2016.1231606>
17. **Lai, M. H. C.** & Kwok, O. (2015). Examining the rule of thumb of not using multilevel modeling: The “design effect smaller than two rule”. *Journal of Experimental Education*, 83, 423–438. <https://doi.org/10.1080/00220973.2014.907229>

16. **Lai, M. H. C.** & Yoon, M. (2015). A modified comparative fit index for factorial invariance studies. *Structural Equation Modeling: A Multidisciplinary Journal*, 22, 236–248. <https://doi.org/10.1080/10705511.2014.935928>
15. **Lai, M. H. C.** & Kwok, O. (2014). Standardized mean differences in two-level cross-classified random effect models. *Journal of Educational and Behavioral Statistics*, 39, 282–302. <https://doi.org/10.3102/1076998614532950>
14. Chu, Y., **Lai, M. H. C.**, Xu, Y., & Zhou, Y. (2012). Test review: Advanced Clinical Solutions for the WAIS-IV and WMS-IV. *Journal of Psychoeducational Assessment*, 30, 520–524. <https://doi.org/10.1177/0734282912442868>

### **Journal Publications in Substantive Research Areas**

13. Clemens, N. H., **Lai, M. H. C.**, Burke, M. D., & Wu, J. (2017). Interrelations of growth in letter naming and sound fluency in kindergarten and implications for subsequent reading fluency. *School Psychology Review*, 46, 272–287. <https://doi.org/10.17105/SPR-2017-0032.V46-3>
12. Richardson, G. B., Dariotis, J. K., & **Lai, M. H. C.** (2017). From environment to mating competition and Super-K in a predominantly urban sample of young adults. *Evolutionary Psychology*, 15. <https://doi.org/10.1177/1474704916670165>
11. Richardson, G. B., Sanning, B. K., **Lai, M. H. C.**, Copping, L., Hardesty, P. H., & Kruger, D. J. (2017). On the psychometric study of human life history strategies: State of the science and evidence of two independent dimensions. *Evolutionary Psychology*, 15. <https://doi.org/10.1177/1474704916666840>
10. Wu, A. M. S., **Lai, M. H. C.**, Yu, S., Lau, J. T. F., & Lei, M.-w. (2017). Motives for Online Gaming Questionnaire: Its psychometric properties and correlation with Internet gaming disorder symptoms among Chinese people. *Journal of Behavioral Addictions*, 6, 11–20. <https://doi.org/10.1556/2006.6.2017.007>
9. McCord, C. E., Elliott, T. R., Berry, J. W., Underhill, A. T., Fine, P. R., & **Lai, M. H. C.** (2016). Trajectories of happiness five years following medical discharge for traumatic disability: Differences between insider and outsider perspectives. *Journal of Happiness Studies*, 17, 553–567. <https://doi.org/10.1007/s10902-014-9610-8>
8. Wu, A. M. S., & **Lai, M. H. C.**, Tong, K., & Yu, M. S. (2016). Psychological correlates of disordered gambling tendencies among Chinese high school and undergraduate students. *International Journal of Mental Health and Addiction*, 14, 322–336. <https://doi.org/10.1007/s11469-016-9632-z>

7. **Lai, M. H. C.**, Wu, A. M. S., & Tong, K. (2015). Validation of the Gambling Refusal Self-Efficacy Questionnaire for Chinese undergraduate students. *Journal of Gambling Studies*, 31, 243–256. <https://doi.org/10.1007/s10899-013-9412-7>
6. Wu, A. M. S., **Lai, M. H. C.**, & Tong, K. (2015). Internet gambling among community adults and university students in Macao. *Journal of Gambling Studies*, 31, 643–657. <https://doi.org/10.1007/s10899-014-9451-8>
5. Hernandez, C. L., Elliott, T. R., Berry, J. W., Underhill, A. T., Fine, P. R., & **Lai, M. H. C.** (2014). Trajectories of life satisfaction: Five years after medical discharge for traumatically acquired disability. *Rehabilitation Psychology*, 59, 183–192. <https://doi.org/10.1037/a0035887>
4. Wu, A. M. S., **Lai, M. H. C.**, & Chan, I. T. (2014). Coaching behaviors, satisfaction of needs, and intrinsic motivation among Chinese university athletes. *Journal of Applied Sport Psychology*, 26, 334–348. <https://doi.org/10.1080/10413200.2014.888107>
3. Wu, A. M. S., **Lai, M. H. C.**, & Tong, K. (2014). Gambling Disorder: Estimated prevalence rates and risk factors in Macao. *Psychology of Addictive Behaviors*, 28, 1190–1197. <https://doi.org/10.1037/a0037603>
2. **Lai, M. H. C.**, Ren, M. Y. W., Wu, A. M. S., & Hung, E. P. W. (2013). Motivation as mediator between national identity and intention to volunteer. *Journal of Community and Applied Social Psychology*, 23, 128–142. <https://doi.org/10.1002/casp.2108>
1. Wu, A. M. S., **Lai, M. H. C.**, Tong, K., & Tao, V. Y. K. (2013). Chinese attitudes, norms, behavioral control and gambling involvement in Macao. *Journal of Gambling Studies*, 29, 749–763. <https://doi.org/10.1007/s10899-012-9344-7>

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## BOOK CHAPTERS

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1. **Lai, M. H. C.** & Tong, K. K. (2011). 媒體使用與評價 [Media usage and evaluation]. In F. M. Cheung, S. L. Wong, P. S. Wan, & V. Zheng (Eds.), *The new face of Macau: Ten years of development and changes* (pp. 285–308). Hong Kong, China: Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong.

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## CONFERENCE PRESENTATIONS

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32. Liu, Y., & **Lai, M. H. C.** (2018, July). *Examining Bayesian approaches for investigating measurement invariance across two groups*. Poster presented at the annual meeting of the Psychometric Society, New York, NY.

31. Atari, M., Dehghani, M., Lai, M. H. C., & Graham, J. (2018, May). *Sex Differences in Moral Foundations: Evidence from 67 Countries*. Poster presented at the Association for Psychological Science Annual Convention, San Francisco, CA.
30. Kwok, O., **Lai, M. H. C.**, Tong, F., Lara-Alecio, R., Irby, B. J., Yoon, M., & Yeh, Y. (2018, April). *Analyzing complex longitudinal data in educational research: A demonstration with the project English language and literacy acquisition (ELLA) data using xxM*. Paper to be presented at the annual meeting of the American Educational Research Association, New York, NY.
29. **Lai, M. H. C.** (2018, April). *Confidence interval for standardized effect size in cluster-randomized trials: Comparing analytic and bootstrap methods*. Paper to be presented at the annual meeting of the American Educational Research Association, New York, NY.
28. **Lai, M. H. C.** & Kwok, O. (2018, March). *Growth models for time-varying cumulative classroom/teacher effects*. Paper presented at the Texas Universities' Educational Statistics and Psychometrics Meeting, College Station, TX.
27. **Lai, M. H. C.** & Kwok, O. (2018, March). *A Model for Time-Varying Cumulative Classroom/Teacher Effects on Students' Growth*. Paper to be presented at the Spring Conference of the Society for Research on Educational Effectiveness, Washington, DC.
26. Wu, A. M. S., Lai, M. H. C., & Yu, S. (2017, September). *Psychological need satisfaction, gaming motives, and Internet gaming disorder*. Paper presented at the 31st Conference of the European Health Psychology Society, Padova, Italy.
25. **Lai, M. H. C.**, & Zhang, J. (2017, April). *Evaluating fit-indexes for multivariate t-based structural equation modeling*. Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.
24. **Lai, M. H. C.**, & Kwok, O. (2017, April). *Standardized mean difference for three-level partially nested data*. Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.
23. **Lai, M. H. C.**, & Zhang, J. (2016, June). *The use of multivariate-t-based maximum likelihood for robust SEM*. Paper presented at the 4th Institute of Mathematical Statistics Asia Pacific Rim Meeting, Hong Kong.
22. Yoon, M., & **Lai, M. H. C.** (2016, June). *Testing factorial invariance with severely unbalanced samples*. Paper presented at the 4th Institute of Mathematical Statistics Asia Pacific Rim Meeting, Hong Kong.
21. Hsiao, Y. Y., Kwok, O., & **Lai, M. H. C.** (2016, April). *Modeling measurement error on interaction effect with items mean scores using structural equation modeling*. Paper

presented at the annual meeting of the American Educational Research Association, Washington, DC.

20. **Lai, M. H. C.**, & Kwok, O. (2016, April). *Using design effects to determine the necessity of applying cross-classified random effects models*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.
19. **Lai, M. H. C.**, & Kwok, O. (2016, March). *Design effects in cross-classified random effects models*. Paper presented at the Texas Universities' Educational Statistics and Psychometrics Meeting, College Station, TX.
18. Kwok, O., Yoon, M., **Lai, M. H. C.**, & Hsiao, Y. Y. (2015, July). *Partial measurement invariance then and now: Methodological aspects and practical implications*. Paper presented at the annual meeting of the Psychometric Society, Beijing, China.
17. **Lai, M. H. C.**, Kwok, O., Hsiao, Y. Y., & Cao, Q. (2015, April). *Finite population correction for two-level hierarchical linear modeling*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
16. Wu, A. M. S., **Lai, M. H. C.**, & Tong, K. K. (2015, April). *Gambling refusal self-efficacy, attitude, injunctive norm and youth gambling in Macao*. Paper presented in The Third Asia Pacific Conference on Gambling & Commercial Gaming Research, Beijing, China.
15. Lara-Alecio, R., Tong, F., Irby, B. J., Guerrero, C. L., Lopez, T., **Lai, M. H. C.**, & Jimenez, D. D. (2015, April). *Third grade bilingual teachers' pedagogical differences during ESL block in a randomized control trial study*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
14. **Lai, M. H. C.**, Kwok, O., Hsiao, Y. Y., & Cao, Q. (2015, March). *Finite population correction for two-level hierarchical linear modeling*. Paper presented at the Texas Universities' Educational Statistics and Psychometrics Meeting, Austin, TX.
13. **Lai, M. H. C.** (2014, November). *Bootstrap Confidence Intervals for Multilevel Effect Size*. Poster presented at the Conference "Advances in Multilevel Modeling for Educational Research", College Park, MD.
12. Cao, Q. & **Lai, M. H. C.** (2014, July). *Sensitivity of fit indices to test for cluster bias in multilevel data*. Paper presented at the 79th Annual Meeting of the Psychometric Society, Madison, WI.
11. Hsiao, Y. Y. & **Lai, M. H. C.** (2014, April). *The impact of partial measurement invariance on tests of moderation for single and multi-level data*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

10. **Lai, M. H. C.** & Kwok, O. (2014, April). *Standardized mean difference in partially nested data*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.
9. **Lai, M. H. C.**, Tong, F., Yoon, M., Lara-Alecio, R., Irby, B. J., & Kwok, O. (2014, April). *Modeling cross-classified data with adequate within-subject variance-covariance structures: A lesson from the Project ELLA data*. Poster presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.
8. Wu, A. M. S., **Lai, M. H. C.**, & Tong, K.-k. (2014, February). *Internet gambling: Participation and addiction in Macao*. Paper presented at the 5th International Gambling Conference (IGC2014), Auckland, New Zealand.
7. Wu, A. M. S., **Lai, M. H. C.**, & Tong, K. (2013, December). *Prevalence of gambling involvement and gambling disorder in Macao*. Paper presented at the Second Asia Pacific Conference on Gambling & Commercial Gaming Research (APCG2013), Kaohsiung, Taiwan.
6. **Lai, M. H. C.** & Kwok, O. (2013a, August). *Standardized mean difference in cross-classified random effect models*. Poster presented at the American Psychological Association annual convention, Honolulu, HI.
5. Wu, A. M. S., **Lai, M. H. C.**, Tong, K. K., & Tao, V. Y. K. (2013, July). *Application of the theory of planned behavior on gambling involvement among Chinese people*. Paper presented at the 13th European Congress of Psychology, Stockholm, Sweden.
4. **Lai, M. H. C.** & Kwok, O. (2013b, May). *The excuse of not using multilevel modeling: An investigation of the “design effect larger than two” rule*. Poster presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
3. **Lai, M. H. C.** (2013, April). *Comparing Pearl’s partial coefficient test with the other global- and local-fit measures in SEM*. Paper presented at the Texas Universities’ Educational Statistics and Psychometrics Meeting, Austin, TX.
2. **Lai, M. H. C.** (2012, February). *A review of the panoply of univariate and multivariate effect size choices*. Paper presented at the annual meeting of the Southwest Educational Research Association, New Orleans, LA.
1. **Lai, M. H. C.** & Tong, K. (2010, June). *澳門市民的媒體使用及對傳媒公信力的評價 [Macao citizen’s habit of using mass media and evaluation on media credibility]*. Paper presented at the Conference on Macau’s Ten-Year Development, Macau, China.

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## INVITED PRESENTATIONS

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**Introduction to Bayesian data analysis,**

Texas A&amp;M University, TX

2017 May

**Practical understanding on application of structural equation modeling,**

City University of Hong Kong, Hong Kong

2016 June

- A 2.5-hour workshop invited by the Hong Kong Society of Behavioral Health

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**DEPARTMENTAL TALKS**


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**Can we trust test scores? A methodological discussion on the impact of measurement invariance**

2017 Nov

- Presentation at Power Friday, University of Cincinnati, OH

**Standardized mean difference in partially nested data**

2016 Nov

- Presentation at the Data Analytics Showcase & Networking Event, University of Cincinnati, OH

**Quantitative methods for interdisciplinary research**

2016 April

- Presentation at the Best Practices in Research Meeting, University of Cincinnati, OH

**Standardized mean difference in partially nested data**

2015 Oct

- Research presentation at the Quantitative and Mixed Methods Research Methodologies (QMRM) Brown Bag, University of Cincinnati, OH

**Doing Monte Carlo simulation studies with Mplus**

2013 Jan &amp; 2014 Jan

- Presentation at Texas A&M University, TX

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**HONORS AND AWARDS**


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**McRel International**

2018 Aug 1–2020 Dec 31

Evaluation of “Identity-Based Motivation Journey to Academic Success.” (Original grant funded by Department of Education, Investing in Innovation Fund [i3] Development Grants, Co-PIs: Katie Anderson and Daphna Oyserman, Award No. U411C150011)

Role: PI (External Evaluator)

Status: Funded (Subaward \$176,418)

**University Research Council AHSS Faculty Research and Scholarship Stipend Awards**

2017

University of Cincinnati

“Impact of Measurement Bias on the Validity of Intervention Studies”

Role: PI

Status: Funded (\$10,000)



**National Institutes of Health, Education and Health: New Frontiers  
(Ro3)**

2017

“Career and technical education and health-behavior disparities” (PI: George Richardson)

Role: Co-PI

Status: Not funded

**Vice President for Research Award**

2016–2018

University of Cincinnati, \$30,500

**Distinguished Honor Graduate**

2015

College of Education and Human Development, Texas A&M University

**Travel Award to present at the Conference “Advances in Multilevel Modeling for  
Educational Research” at University of Maryland**

2014

The Society for Multivariate Experimental Psychology

**Graduate Research Grant**

2014

College of Education and Human Development, Texas A&M University, for the project  
“Bootstrap Confidence Intervals for Multilevel Effect Size”

**Graduate Travel Grant**

2013, 2014, &amp; 2015

College of Education and Human Development, Texas A&M University

**Outstanding Academic Paper Award**

2011

University of Macau

**Jorge Alvares Foundation Academic Prize**

2011

University of Macau

**Rector’s Honor List**

2011

University of Macau

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**TEACHING EXPERIENCE**

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**University of Southern California, Los Angeles, CA**

*Instructor*

PSYC 314L – Experimental Research Methods

**University of Cincinnati, Cincinnati, OH**

*Instructor* (Instructor evaluation: 4.61 / 5)

EDST 8087 – Multilevel Models for Educational Studies

EDST 8075 – Bayesian Data Analysis

EDST 7082 – Getting Started With Multilevel Modeling

EDST 7011 – Statistical Data Analysis II

EDST 7010 – Statistical Data Analysis I

**Texas A&M University**, College Station, TX

*Teaching Assistant*

EPSY 635 - Educational Statistics (Online)

EPSY 651 - Theory of Structural Equation Modeling

● Teaching Evaluation: 4.83 / 5.00

EPSY 652 - Hierarchical Linear Modeling

EPSY 653 - Advanced Structural Equation Modeling

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## MENTORSHIP

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*Current Ph.D. Students, Committee Chair*

Liu, Yuanfang, University of Cincinnati

*Current Ph.D. Students, Committee Member*

Christie, Nina, University of Southern California

Hoover, Joe, University of Southern California

Khaled, Mona, University of Southern California

Ji, Yuhong, Texas A&M University

*Past Ph.D. Students, Committee Member*

Chen, Ching-Chen, University of Cincinnati (Assistant Professor, University of Nevada, Las Vegas, 2016)

Hsiao, Yu-Yu, Texas A&M University (Post doctoral fellow, University of New Mexico, Albuquerque, 2017)

Sunny, Cijy, University of Cincinnati (Lecturer [equivalent to Assistant Professor in US], Murdoch University, Murdoch, Western Australia)

*Past Master Students, Committee Member*

McGee, Nathan, University of Cincinnati

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## COMPUTER SKILLS

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Statistics: R, SAS, SPSS, Stata

SEM: AMOS, LISREL, Mplus, R (lavaan, OpenMx, xxM)

Multilevel: HLM, R (lme4, nlme, brms), SAS (PROC MIXED), SPSS (MIXED), Stata (xtmixed)

Psychometrics: IRTPRO, R (ltm, mirt), WinSteps

Bayesian: JAGS, Stan, WinBUGS

Others: C# CATI, C++, HTML & CSS, LaTeX, Linux, Markdown, Mathematica, Octave, Python, SQL, TeleForm, Visual Basic

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## PROFESSIONAL SERVICE

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*Ad hoc Reviewer*

Asian American Journal of Psychology  
Behavior Research Methods  
Educational and Psychological Measurement  
Evaluation Review  
Evolutionary Psychology  
Frontiers in Psychology  
Journal of Experimental Education  
Journal of Mixed Methods Research  
Journal of Modern Applied Statistical Methods  
Journal of Personality  
Journal of School Psychology  
Multivariate Behavioral Research  
Psychological Methods  
School Psychology Review  
Sociological Methods & Research  
Structural Equation Modeling: A Multidisciplinary Journal

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**PROFESSIONAL MEMBERSHIPS**

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American Educational Research Association (Member)  
American Psychological Association Division 5 (Member)  
American Statistical Association (Member)  
Hong Kong Society of Behavioral Health (Advisor, Methodology Advisor Group)  
Psychometric Society (Member)  
Society for Research in Educational Effectiveness (Member)