

Xin (Cynthia) Tong

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EDUCATION

2009 - 2014	Ph.D. in Quantitative Psychology	University of Notre Dame
2009 - 2013	M.A. in Quantitative Psychology	University of Notre Dame
2007 - 2009	M.S. in Applied Mathematics	Renmin University of China
2003 - 2007	B.S. in Mathematics	Renmin University of China

EMPLOYMENT

2014 - Now	Assistant Professor	University of Virginia
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RESEARCH INTERESTS

- Bayesian methods and statistical computing
- Structural growth curve modeling
- Robust structural equation modeling
- Longitudinal development of cognitive ability and achievement skills

AWARDS

2014	Award for Computational Sciences and Visualization, University of Notre Dame
2014	Outstanding Graduate Student Teaching Award, University of Notre Dame
2013, 2012, 2011	Departmental travel award from the Department of Psychology, University of Notre Dame.
2013, 2011	Student Travel Award from the Society of Multivariate Experimental Psychology to attend its annual meeting.
2013, 2011	Conference Presentation Grant from Graduate Student Union of the University of Notre Dame.

- 2012 Student Travel Award from the Society of Multivariate Experimental Psychology to chair the pre-conference of its annual meeting at Vancouver, BC, Canada.
- 2012 Graduate Student Professional Development Award, University of Notre Dame.

PUBLICATIONS

- Tong, X.,** & Zhang, Z. (*under review*). Outlying observation diagnostics in growth curve modeling. *Psychological Methods*.
- Taylor, L. K., **Tong, X.,** & Maxwell, S. E. (*under review*). Evaluating supplemental samples in longitudinal research: Replacement and Refreshment approaches. *Psychological Methods*.
- Tong, X.** & Ke, Z. (2016). Growth Curve Modeling for Nonnormal Data: A Two-stage Robust Approach versus a Semiparametric Bayesian Approach. *Springer Proceedings in Mathematics & Statistics*.
- Yuan, K.-H., **Tong, X.,** & Zhang, Z. (2015). Bias and efficiency for SEM with missing data and auxiliary variables: Two-Stage Robust Method versus Two-Stage ML. *Structural Equation Modeling: A Multidisciplinary Journal*, 22, 178-192.
- Zhang, Z., Wang, L., & **Tong, X.** (2015). Mediation Analysis with Missing Data through Multiple Imputation and Bootstrap. *Springer Proceedings in Mathematics & Statistics*.
- Tong, X.,** Zhang, Z., & Yuan, K.-H. (2014). Evaluation of Test Statistics for Robust Structural Equation Modeling with Nonnormal Missing Data. *Structural Equation Modeling: A Multidisciplinary Journal*, 21, 553–565.
- Seroczynski, A.D., **Tong, X.,** Grundy, A., Jobst, A., and Hull, B. (2014). Quantifying the Qualitative: Using Growth Curve Models to Differentiate Moral Development among Juvenile Offenders. *Can Virtue be Measured: Proceedings of the annual conference of the Jubilee Centre for Character and Values*.
- Tong, X.,** & Zhang, Z. (2014). Semiparametric Bayesian Modeling with Application in Growth Curve Analysis. *Multivariate Behavioral Research*, 49, 299. (Abstract)
- Zhang, Z., Lai, K., Lu, Z., & **Tong, X.** (2013). Bayesian inference and application of robust growth curve models using student's t distribution. *Structural equation modeling*, 20(1), 47-78.
- Tong, X.,** & Zhang, Z. (2012). Diagnostics of robust growth curve modeling using student's t distribution. *Multivariate Behavioral Research*, 47(4), 493-518.

- Tong, X.**, Zhang, Z., & Yuan, K.-H. (2011). Evaluation of test statistics for robust structural equation modeling with non-normal missing data. *Multivariate Behavioral Research*, 46, 1016. (Abstract)
- Liu, W., **Tong, X.**, & Lin, Y. (2011). An approximation procedure for stock prices with fractal functions. *Journal of Mathematics in Practice and Theory*, 41(2), 15-24.
- Lin, Y., & **Tong, X.** (2008). Fractal fitting research on stock prices. *Congress on Image and Signal Processing*, 4, 49-53.

SOFTWARE DEVELOPMENT

- Tong, X.**, & Zhang, Z. (2016). gcmdiag: An R package to identify multivariate outlying observations in growth curve modeling.
- Zhang, Z. and **Tong, X.** (2011). Online software of distribution diagnostics for robust growth curve models. Available at <http://nd.psychstat.org/research/mbr2012>.
- Zhang, Z., **Tong, X.**, & Lu, Z. (2010). Online software for Bayesian estimation of robust growth curve models using Student's t distribution. Available at <http://webstats.psychstat.org/semrgcm>.

WORK IN PREPARATION

- Shi, D.*, & **Tong, X.** (*paper in preparation*). The Impact of Prior Information on Bayesian Estimation for Latent Basis Growth Models.
- Tong, X.**, & Zhang, Z. (*paper in preparation*). gcmdiag: An R package to identify multivariate outlying observations in growth curve modeling.
- Tong, X.**, & Zhang, Z. (*paper in preparation*). Robust semiparametric Bayesian methods in growth curve modeling.
- Tong, X.**, & Ke, Z. (*paper in preparation*). Robust approaches for growth curve modeling.
- Mazen, J.*, & **Tong, X.** (*work in progress*). Evaluation of supplemental samples in longitudinal research with nonnormal missing data.
- Tong, X.**, & Boker, S. M. (*work in progress*). Bootstrap Standard Error Estimates in Latent Differential Equation Modeling.
- Tong, X.**, & Shi, D.*, & Schmidt, K. (*work in progress*). Modeling missing data in item response models using Bayesian methods.
- Tong, X.**, & Zhang, Z. (*work in progress*). Bayesian estimation of differential equation

models with Gaussian processes.

INVITED PRESENTATIONS

- Tong, X.** (2016, June). Diagnostics of Growth Curve Modeling. An invited talk given to the Department of Psychology, Sun Yat-Sen University, Guangzhou, China.
- Tong, X.** (2013, June). Robust structural equation modeling with nonnormal/missing data. An invited talk given to the Department of Mathematics, Renmin University of China, Beijing, China.
- Yuan, K.-H., **Tong, X.**, & Zhang, Z. (2012, July). Bias and efficiency for SEM with missing data and auxiliary variables: Robust method versus normal distribution based ML. An invited talk given at the 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting (*Invited Paper Session*). Tsukuba, Japan.

CONFERENCE PRESENTATIONS

- Tong, X.**, & Boker, S. M. (2016, August). The Impact of Masking and Swamping Effects for Multivariate Outlier Diagnosis in Structural Equation Modeling. Paper presented at the 2016 Annual Convention of the American Psychological Association, Denver, CO.
- Mazen, J.* & **Tong, X.** (2016, August). Evaluation of supplemental samples in longitudinal research with nonnormal missing data. Paper presented at the 2016 Annual Convention of the American Psychological Association, Denver, CO.
- Ke, Z., & Zhang, Q., & **Tong, X.** (2016, August). Random Effect Meta-Analytic Structural Equation Modeling: A Bayesian Approach. Paper presented at the 2016 Annual Convention of the American Psychological Association, Denver, CO.
- Shi, D.* & **Tong, X.** (2016, August). The Impact of Prior Information on Bayesian Estimation for Latent Basis Growth Models. Paper presented at the 2016 Annual Convention of the American Psychological Association, Denver, CO.
- Tong, X.**, & Boker, S. M. (2016, May). Bootstrap Standard Error Estimates in Latent Differential Equation Modeling. Paper presented at the 28th Annual Convention of Association for Psychological Science, Chicago, IL.
- Shi, D.* & **Tong, X.** (2016, April). The Impact of Informative Priors for Parameter Recovery in Bayesian Confirmatory Factor Model. Paper presented at the 2016 Annual Meeting of American Educational Research Association, Washington, DC.

- Tong, X., & Ke, Z.** (2015, July). Growth curve modeling for nonnormal data: a two-stage robust approach versus a semiparametric Bayesian approach. Paper presented at the 2015 Annual Conference of Psychometric Society, Beijing, China.
- Tong, X., & Zhang, Z.** (2015, May). Robust Bayesian Methods in Growth Curve Modeling. Paper presented at the 2015 Modern Modeling Methods Conference, Storrs, CT.
- Taylor, L. K., **Tong, X.**, & Maxwell, S. E. (2014, September). Evaluating supplemental samples in longitudinal research: Replacement and Refreshment approaches. Poster presentation at the 2014 Society for Research on Child Development, Special topic Meeting on Developmental Methodology, San Diego, CA.
- Tong, X., & Zhang, Z.** (2014, May). Robust semiparametric Bayesian methods in growth curve modeling with nonnormal data. Paper presented at the 26th Annual Convention of Association for Psychological Science, San Francisco, CA.
- Seroczynski, A.D., **Tong, X.**, Grundy, A., Jobst, A., and Hull, B. (2014, January). Quantifying the Qualitative: Using Growth Curve Models to Differentiate Moral Development among Juvenile Offenders. Paper presented at the 2nd Annual Conference of the Jubilee Centre for Character and Values, Oxford, UK.
- Tong, X., & Zhang, Z.** (2013, October). Nonparametric Bayesian modeling with applications in growth curve analysis. Poster presentation at the 11th Graduate Student Pre-conference of Annual Society of Multivariate Experimental Psychology Meeting, Tampa, FL.
- Tong, X., & Zhang, Z.** (2013, July). Outlying Observation Diagnostics in Growth Curve Modeling. Paper presented at the 78th Annual Conference of Psychometric Society, Arnhem, the Netherlands.
- Tong, X., Zhang, Z., & Yuan, K.-H.** (2012, May). Evaluation of test statistics for robust structural equation modeling. Paper presented at the 24th Annual Convention of Association for Psychological Science, Chicago, IL.
- Zhang, Z., Lai, K., Lu, Z., & **Tong, X.** (2012, May). Bayesian Robust Growth Curve Modeling Based on Student's t Distribution. Paper presented at the 24th Annual Convention of Association for Psychological Science, Chicago IL.
- Tong, X., Zhang, Z., & Yuan, K.-H.** (2011, October). Evaluation of test statistics for robust SEM with non-normal missing data. Paper presented at the 9th Graduate Student Pre-conference of Annual Society of Multivariate Experimental Psychology Meeting, Norman, OK.
- Tong, X., & Zhang, Z.** (2011, August). Bayesian inference for robust growth curve modeling using t distribution. Paper presented at the 119th Convention of the American Psychological Association, Washington, DC.

Cheung, R. Y. M., **Tong, X.**, & Shrestha, G. (2011, June). The role of social support in the relationship between family violence and suicidal tendency: a test of competing hypotheses. Paper presented at the Society of Prevention Research 2011 Annual Meeting, Washington, DC.

DEPARTMENTAL SEMINAR PRESENTATIONS

Tong, X. (2015, September). Outlying Observation Diagnostics in Growth Curve Modeling. Present to the Quantitative program in Department of Psychology, University of Virginia.

Tong, X. (2014, September). Robust Bayesian methods in growth curve modeling. Present to the Quantitative program in Department of Psychology, University of Virginia.

AD HOC REVIEWER

Psychological Methods

Multivariate Behavioral Research

Structural Equation Modeling: A Multidisciplinary Journal

Behavior Genetics

Journal of Multivariate Analysis

Measurement and Evaluation in Counseling and Development

Journal of Autism and Developmental Disorders

TEACHING EXPERIENCES

Spring 2016:

Research Methods & Data Analysis II (PSYC 3006-200)

Spring 2015:

Bayesian Data Analysis (PSYC 5559-003)

STATISTICAL CONSULTING

Summer 2012/Fall 2012/Spring 2013:

Statistical Consultant, Department of Psychology, University of Notre Dame:

- Provide service to faculty and graduate students regarding their research projects and grant proposals;
- Help them to address questions and comments from reviewers about their paper submissions;
- Help them with statistical techniques in regression, ANOVA, MANOVA, structural equation modeling, Bayesian statistics, multilevel modeling, missing data analysis, growth curve modeling, statistical testing, item response theory, application of statistical software (e.g., R, SAS, SPSS, Mplus, WinBUGS, EQS), etc.

SERVICE

Chair of the Pre-conference of the Society of Multivariate Experimental Psychology's Annual Meeting, Vancouver, BC, Canada, 2012.