

## Q. CHELSEA SONG

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### ACADEMIC EMPLOYMENT

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2018 – present      **Purdue University**  
Assistant Professor, Industrial-Organizational Psychology  
Department of Psychological Sciences

### EDUCATION

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#### University of Illinois at Urbana-Champaign

Ph.D.      Industrial-Organizational Psychology      *May, 2018*  
Committee: D. A. Newman (Co-Chair), J. Rounds (Co-Chair),  
F. Drasgow, D. A. Briley, V. Stodden  
*Minors: Quantitative Psychology, Computer Science*

M.S.      Statistics (Applied)      *August, 2016*

M.A.      Industrial-Organizational Psychology      *August, 2015*

#### Renmin University of China

B.S.      Applied Psychology      *June, 2013*

### RESEARCH INTERESTS

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- Diversity in HR (enhancing race & gender diversity via hiring; adverse impact reduction)
- Individual differences (vocational interests, personality, and person-environment fit)
- Research methods (Advanced quantitative analytics): Pareto-optimization, machine learning/Big Data

### REFEREED PUBLICATIONS

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\*primary author(s); <sup>1</sup>undergraduate student, <sup>2</sup>graduate student, <sup>3</sup>postdoctoral scientist

Hoff\*, K., Song\*, Q. C., Wee\*, J. M. C., Phan, J., & Rounds, J. (in press). Interest fit and job satisfaction: A systematic review and meta-analysis. *Journal of Vocational Behavior*. \*equal contribution

Song\*, Q. C., Tang<sup>2</sup>, C., & Wee, S. (in press) Making sense of model generalizability: A tutorial on cross-validation in R and Shiny. *Advances in Methods and Practices in Psychological Science*.

Wee\*, S., Newman, D. A., & Song, Q. C., Schinka, J. A. (2020). Vocational interests, gender, and job performance: Two person-occupation cross-level interactions. *Personnel Psychology*. doi:10.1111/peps.12411

Rupp\*, D. C., Song\*, Q. C., Strah\*<sup>2</sup>, N. (2020). Addressing the so-called validity-diversity trade-

off: Exploring the practicalities and legal defensibility of Pareto-optimization for reducing adverse impact within personnel selection. *Industrial and Organizational Psychology: Perspectives on Science and Practice*. doi:10.1017/iop.2020.19 \*equal contribution

Stoll\*, G., Einarsdóttir, S., **Song, Q. C.**, Ondish, P., Sun, J. T., & Rounds, J. (2020). The roles of personality traits and vocational interests in explaining what people want out of life. *Journal of Research in Personality*. 84, 103939. doi:10.1016/j.jrp.2020.103939.

Forbush\*, K., **Song, Q. C.**, Tay, L., Gould, S. R., Chapa, D., A., N., Cushing, C., C., & Ptomey, L., T. (2020). Do differences between individuals who are normal weight or obese on self-report measures of disinhibited eating and restrained eating reflect reality or item “bias”? *Psychological Assessment*. 32(6), 553-567. doi:10.1037/pas0000810.

Hoff\*, K., **Song, Q. C.**, Einarsdóttir, S., Briley, D. A., & Rounds, J. (2020). Developmental structure of personality and interests: A 4-wave, 8-year longitudinal study. *Journal of Personality and Social Psychology*. 118(5), 1044-1064. doi:10.1037/pspp0000228.

Cao\*, M., **Song, Q. C.**, & Tay, L. (2018). Detecting curvilinear relationships: A comparison of scoring approaches based on different item response models. *International Journal of Testing*. 18(2), 178-205. doi:10.1080/15305058.2017.1345913.

**Song\*, Q. C.**, Wee, S., & Newman, D. A. (2017). Diversity shrinkage: Cross-validating Pareto-optimal weights to enhance diversity via hiring practices. *Journal of Applied Psychology*. 102(12), 1636-1657. doi:10.1037/apl0000240.

Wee\*, S., Newman, D. A., & **Song, Q. C.** (2015). More than g-factors: Second-stratum factors should not be ignored. *Industrial and Organizational Psychology: Perspectives on Science and Practice*. 8(3), 482-488. doi:10.1017/iop.2015.66.

## BOOK CHAPTERS AND TECHNICAL REPORTS

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\*primary author(s); <sup>1</sup>undergraduate student, <sup>2</sup>graduate student, <sup>3</sup>postdoctoral scientist

**Song, Q. C.**, Liu, M. Q., Tang<sup>2</sup>, C., & Long<sup>1</sup>, L. (2020). Big data in the workplace and talent analytics. *Big Data Methods for Psychological Research: New Horizons and Challenges*. Washington D. C., APA books.

Rounds, J., Wee, J. M. C., Cao, M., **Song, Q. C.**, & Lewis, P. (2016). *Development of an O\*NET Mini Interest Profiler (Mini-IP) for Mobile Devices: Psychometric Characteristics*. National Center for O\*NET Development, Raleigh, NC. doi: 10.13140/RG.2.1.4767.4487.

**Song, Q.**, & Hu, P. (2013). Career counseling. *Vocational Psychology*. Beijing, Renmin University Press.

## CONFERENCE PRESENTATIONS

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\*primary author(s); <sup>1</sup>undergraduate student, <sup>2</sup>graduate student, <sup>3</sup>postdoctoral scientist

**Song, Q. C.** & Tang<sup>2</sup>, C. (June, 2020). Adverse impact reduction for multiple subgroups: A Pareto-optimization approach. In **Q. C. Song** (Co-Chair) and S. Wee (Co-Chair), Multi-Objective Optimization in the Workplace: Addressing Adverse Impact in Selection. Symposium presentation at the 35<sup>th</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Virtual Conference.

Tang<sup>2</sup>, C., Newman, D. A., & **Song, Q. C.** (June, 2020). Addressing diversity-validity trade-offs

- via orthogonalized criteria weighting. In **Q. C. Song** (Co-Chair) and S. Wee (Co-Chair), *Multi-Objective Optimization in the Workplace: Addressing Adverse Impact in Selection*. Symposium presentation at *the 35<sup>th</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Virtual Conference*.
- Tang<sup>2</sup>, C., Chen<sup>2</sup>, Y., **Song, Q. C.**, & Newman, D. A. (April, 2019). Effects of predictor weighing considering adverse impact and shrinkage: Reply to Sackett et al. (2017). Poster presentation at *the 34<sup>th</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Washington, D.C.*
- Hoff, K. A., Wee, C. J. M., **Song, Q. C.**, Phan, J., & Rounds, J. (July, 2018). Meta-analysis of vocational interests and job satisfaction: Challenging a common belief. Presentation at *the 2018 Academy of Management Meeting, Chicago, IL*.
- Einarsdóttir, S., Hoff, K. A., **Song, Q. C.**, & Rounds, J. (July, 2018). Interests and personality codevelopment during adolescence and young adulthood in Iceland. In J. Rounds (Chair), *Continuity and Change in Interests*. Symposium presentation at *the 2018 European Conference on Personality, Zadar, Croatia*.
- Song, Q. C.**, Wee, S., & Newman, D. A. (April, 2018). Enhancing diversity: Pareto-optimal weighting algorithm with regularization. In Thompson, I. (Chair), *Machine learning techniques for multiple criteria optimization*. Symposium presentation at *the 33<sup>rd</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Chicago, IL*.
- Einarsdóttir, S., & **Song, Q. C.** (August, 2017). Longitudinal development of interests and personality traits in emerging adulthood. In J. Rounds (Chair), *Continuity and Change in Interests*. Symposium presentation at *125<sup>th</sup> Annual Convention of American Psychological Association, Washington D.C.*
- Song, Q. C.**, Wee, S., & Newman, D. A. (August, 2017). Diversity shrinkage: Cross-validating Pareto-optimal weights to enhance diversity via hiring practices. Invited presentation, recipient of IPAC James C. Johnson Student Paper Award. *The International Personnel Assessment Council 2017 Annual Conference, Birmingham, AL*.
- Song, Q. C.**, Tay, L., & Liu, Y. (April, 2017). Assessing the sample size requirements for accurately estimating dichotomous and polytomous item response theory model item parameters. In G. J. Gray (Chair), *Continuing to Broaden the Scope of IRT in Organizational Research*. Symposium presentation at *the 32<sup>nd</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL*.
- Song, Q. C.**, Newman, D. A., & Wee, S. (April, 2017). Approximation of diversity shrinkage from Pareto weights for diversity-performance tradeoffs. In S. B. Morris (Chair), *Optimizing Validity/Diversity Tradeoffs in Employee Selection*. Symposium presentation at *the 32<sup>nd</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL*.
- Song, Q. C.**, & Rounds, J. (April, 2017). The predictive power of values for work outcomes. Poster presentation at *the 32<sup>nd</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL*.
- Wee, S., Newman, D. A., **Song, Q. C.**, & Heffner, T. (April, 2017). Sex and vocational interest congruence predicting job performance. In C. D. Nye & A. Ion (Co-chairs), *New Advances in Research on the Validity of Vocational Interests*. Symposium presentation at *the 32<sup>nd</sup> Annual*

*Conference of the Society for Industrial and Organizational Psychology, Orlando, FL.*

Einarsdóttir, S., & **Song, Q. C.** (March, 2017). Longitudinal development of interests and personality traits in emerging adulthood. In J. Rounds (Chair), *Continuity and Change in Interests*. Symposium presentation at *2017 International Convention of Psychological Science, Vienna, Austria*.

**Song, Q. C.**, Wee, S., & Newman, D. A. (April, 2016). Cross-validating Pareto-optimal weights for reducing adverse impact. In P. J. Hanges & J. Y. Park (Co-chairs), *New Insights into Adverse Impact: Origination, Motivation, and Scale Weighting*. Symposium presented at the *31<sup>st</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Anaheim, CA*.

**Song, Q. C.**, Wee, C. J. M., Earl, K., & Rounds, J. (April, 2016). Revisiting interest congruence and job satisfaction: Fourth time's the charm. In C. D. Nye (Chair), *Advancing the Validity of Vocational Interests in the Workplace*. Symposium presented at the *31<sup>st</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Anaheim, CA*.

Cao, M., Phan, J., **Song, Q.**, Cho, S., & Drasgow, F. (April, 2015). Do job applicants fake on vocational interest measures? Poster presented at the *30<sup>th</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Philadelphia, PA*. Featured on *SIOP.org*, September 30, 2015.

Cao, M., **Song, Q.**, Drasgow, F., & Rounds, J. (May, 2014). Testing cross-cultural measurement equivalence of an ideal-point-based vocational interest scale. In G. Sawhney & K. P. Cigularov (Co-chairs), *Measurement Equivalence of Personality Measures Across Different Methods and Cultures*. Symposium presented at the *29<sup>th</sup> Annual Conference of the Society for Industrial and Organizational Psychology, Honolulu, HI*.

Cai, J., Hu, P., Wei, Q., Rong, T., & **Song, Q.** (August, 2013). The restoration of modern urban environment. Poster presented at the *2013 Annual Convention of American Psychological Association, Honolulu, U.S.A.*

**Song, Q.**, & Hu, P. (December, 2012). Career choice in emerging adulthood. Presentation at the *15th Chinese National Convention of Psychology, Guangdong, China*.

**Song, Q.**, & Hu, P. (July, 2012). The development of career compromise during university stage. Oral presentation at *2012 International Congress of Psychology, Cape Town, South Africa*.

## **INVITED TALKS**

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Vocational interests and person-environment fit in the workplace (February, 2020). Purdue University, Social Psychology Colloquium, Department of Psychological Sciences. West Lafayette, IN.

Multi-objective optimization in personnel selection: Addressing validity-diversity trade-off and further potentials of the technique (November, 2019). Industrial-Organizational Psychology Brownbag. Bowling Green University. Bowling Green, OH.

Multi-objective optimization in personnel selection: Addressing validity-diversity trade-off and further potentials of the technique (November, 2019). Industrial-Organizational Psychology Brownbag. Purdue University. West Lafayette, IN.

Introduction to exploratory factor analysis in R (September, 2019) CARMA OverView SeRies: Introduction to R for Organizational Research. Consortium for the Advancement for Research Methods and Analysis.

Multi-objective optimization in the workplace (September, 2019). Advanced Methods at Purdue, Purdue University. West Lafayette, IN.

Diversity shrinkage of Pareto-optimal solutions in hiring practice: Simulation, shrinkage formula, and a regularization technique. (September, 2018). Purdue University, Mathematical Computational and Cognitive Science Colloquium, Department of Psychological Sciences. West Lafayette, IN.

Diversity shrinkage: Cross-validating Pareto-optimal weights to enhance diversity via hiring practices. (August, 2017). Invited presentation, recipient of IPAC James C. Johnson Student Paper Award. The International Personnel Assessment Council 2017 Annual Conference, Birmingham, AL.

## **PUBLISHED COMPUTER PROGRAMS AND WEB APPLICATIONS**

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**ParetoR** (R package) <https://github.com/Diversity-ParetoOptimal/ParetoR>

- R program that provides a set of Pareto-optimal predictor weights to simultaneously optimize both diversity and criterion validity in a personnel selection scenario.

**Pareto-Optimal Trade-Off Solutions** (R Shiny app) <https://qchelseasong.shinyapps.io/ParetoR/>

- Web application to help make selection decisions in hiring and admissions. It provides a set of Pareto-optimal predictor weights that simultaneously optimize both diversity and criterion validity (i.e., job performance).

**MetaInd** (R package) <https://github.com/qcsong/MetaInd>

- R program that provides meta-analytic estimates using Hunter and Schmidt (2014) method with independent correction for each individual effect size.

## **MEDIA COVERAGE**

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“Job Interests Predict Life Goals Better Than Personality, According To A New Psychology Study” Forbes, March 26, 2020 <https://www.forbes.com/sites/traversmark/2020/03/26/job-interests-predict-life-goals-better-than-personality-according-to-a-new-psychology-study/#21b7b2291b32>

“Feigning Interest: Will Job Applicants Fake What They Love to Get a Job?” *SIOP.org*, September 30, 2015

## **GRANTS**

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*Designing and Auditing Fairness in Machine Learning with Humans in the Loop*, (02/01/2020-01/31/2023). National Science Foundation. Status: Not Funded. Amount: \$ 1,500,000. PI: Ming Yin, Co-I: Yang Liu, Q. Chelsea Song, Sang Eun Woo.

*Development of a Military-Specific Transdiagnostic Eating-Disorder Survey and Screening Tool in a Nationally Representative Sample of Veterans*, (10/2019-09/2022). Department of Defense. Status: Funded. Amount: \$ 1,721,698. PI: Kelsie Forbush, Co-I: Q. Chelsea Song,

Alesha Doan, David Watson, Mary Oehlert.

- The project first aimed to assess comorbidity patterns between eating disorders (ED) and other mental-health conditions. Second, we aim to identify prevalence, diagnosis, and treatment-seeking patterns of ED. Finally, we focus on testing the relationships among ED prevalence and comorbidity with military-unique risk factors, including military sexual trauma, combat trauma, and history of disordered-eating behaviors designed to achieve military weight and personal appearance requirements.

*Development of a Vocational Interests Computer Adaptive Test*, (2013-2014). Robert P. Larsen Grant for Research in Career Development, University of Illinois at Urbana-Champaign. Status: Funded. Amount: \$ 1,500. Co-PI: Q. Chelsea Song, Jonathan Phan, Mengyang Cao, Bertha Rangel, Seonghee Cho.

- The aim of the project is to develop a work-task-based vocational interest computer adaptive test that greatly reduces the number of items required to test the full spectrum of interest whilst still retaining a high degree of reliability.

*Student Innovation Research Grant*, Renmin University of China, (2010-2012). [\$800]

## **AWARDS AND HONORS**

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2018	2018 SIOP Graduate Student Scholarship (given “to recognize achievement of a graduate student”)
2017	Meredith P. Crawford Fellowship in I-O Psychology (HumRRO; one award granted per year, given “to a graduate student demonstrating exceptional research skills”) [\$12,000]
2017	The International Personnel Assessment Council (IPAC) James C. Johnson Student Paper Award (one award granted per year, to “recognize the contributions of students in the field of personnel assessment”)
2017	Department of Psychology Diversity Award, University of Illinois at Urbana-Champaign (one award granted per year, “for outstanding original research that contributes to diversity science”)
2017	Charles L. Hulin Fellowship, University of Illinois at Urbana-Champaign (one award granted per year, awarded to a graduate student in I-O Psychology)
2015	Social-Personality-Organizational Summer Research Fellowship, University of Illinois at Urbana-Champaign
2014	Social-Personality-Organizational Summer Research Fellowship, University of Illinois at Urbana-Champaign
2012	Student Leadership Scholarship, Renmin University of China
2011	Student Leadership Scholarship, Renmin University of China
2011	Outstanding Volunteers Scholarship, Renmin University of China

## **TEACHING EXPERIENCE**

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Purdue University, Assistant Professor

- PSYC610 Multivariate Analysis in the Behavioral Sciences *Fall 2018 – 2020*
- Ph.D.-level advanced statistics seminar, 16 students
  - New course preparation

Purdue University, Assistant Professor

- PSYC 473 Personnel Selection and Performance Appraisal *Spring 2020*
- Undergraduate-level course, 30 students
  - New course preparation

Purdue University, Assistant Professor

- PSYC272 Introduction to Industrial-Organizational Psychology *Spring 2019*
- Undergraduate-level course, 150 students
  - New course preparation

University of Illinois at Urbana-Champaign, Instructor

- PSYC245 Introduction to Industrial/Organizational Psychology *Fall & Spring 2017*
- Undergraduate-level course, 150 students

University of Illinois at Urbana-Champaign, Teaching Assistant

- PSYC350 Social Psychology Methods Lab *Spring 2014 – 2015*
- Undergraduate-level methods course, 50 students
- PSYC332 Personality Psychology Methods Lab *Fall 2013 – 2014*
- Undergraduate-level methods course, 50 students

**Doctoral Dissertation Committee**

- Rachel Saef: The Role of Personality in Construing and Reacting to Work Situations
- Louis Hickman (in progress): Algorithmic Cognitive Ability Prediction in Video Interviews
- Nicole Schultz (in progress; role: Co-Chair)

**Master's Thesis Committee**

- Sharon Lee (in progress): A Needs Framework for Refugee Integration in the Workplace

**PROFESSIONAL SERVICE**

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Editorial Board

- Journal of Applied Psychology (Contributing Editor)

Ad-hoc Reviewer

- Organizational Research Methods  
Journal of Vocational Behavior  
Advances in Methods and Practices in Psychological Science  
Society of Industrial-Organizational Psychology

Committee Membership

- I-O Job Search Committee, College of Health and Human Sciences, Purdue University  
(Fall 2019)

Faculty Representative

- Diversity Council, College of Health and Human Sciences, Purdue University

(Fall 2018 – Spring 2020)

Undergraduate career development

PSYC100 Introduction to career in I-O psychology and career experience share (09/19/18)

**OTHER PROFESSIONAL EXPERIENCES**

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**Google Inc.**

PhD Intern, Hiring Innovation (People Operations)

*May, 2017 – August, 2017*

- Built roadmap and initiated development of new assessment tool for hiring for various job roles in the organization.
- Data analysis to identify effective predictors (individual differences) for hiring purposes.
- Developed guideline for evaluation of assessment-related business needs.

**Google Inc.**

PhD Intern, Hiring Innovation (People Operations)

*May, 2016 – August, 2016*

- Provided consultation on statistics and experimental design related to hiring practice.
- Evaluated and optimized hiring practices through experimental studies and psychometric research.
- Taught advanced psychometric topics through series of knowledge sharing sessions.

**PROFESSIONAL AFFILIATIONS**

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Society for Industrial and Organizational Psychology

Academy of Management

Association for Psychological Science

Last updated: 10/2020