

Q. CHELSEA SONG

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ACADEMIC EMPLOYMENT

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

EDUCATION

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

- 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

JOURNAL PUBLICATIONS

*primary author(s), ¹undergraduate student, ²graduate student, ³postdoctoral scientist

Wee*, S., Newman, D. A., **Song, Q. C.**, & Schinka, J. A. (in press). Vocational interests, gender, and job performance: Two person-occupation cross-level interactions. *Personnel Psychology*.

Song*, Q. C., Tang², 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*.

Rupp*, D. C., **Song***, Q. C., & Strah*², N. (2020). Resolution to validity-diversity trade-offs? 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*. *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*. 86, 103939. doi: 10.1016/j.jrp.2020.103939.

Featured in Forbes, March 26, 2020

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*. Advanced online publication. doi: 10.1037/pas0000810.

Hoff*, K., **Song, Q. C.**, Einarsdóttir, S., Briley, D. A., & Rounds, J. (2019). Developmental structure of personality and interests: A 4-wave, 8-year longitudinal study. *Journal of Personality and Social Psychology*. 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*. 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*. doi: 10.1037/apl0000240.

*Winner of 2017 James C. Johnson Best Student Paper Award,
International Personnel Assessment Council*

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.

Song*, Q., & Hu, P. (2012). The development of career compromise during emerging adulthood. *First Resource (CSSCI)*, 6, 72-86.

BOOK CHAPTERS AND TECHNICAL REPORTS

Song*, Q. C., Liu, M. Q., Tang², C., & Long¹, L. (in press). 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.

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

GRANTS

2019 – 2022 *Development of a Military-Specific Transdiagnostic Eating-Disorder Survey and Screening Tool in a Nationally Representative Sample of Veterans*

Amount: \$1,700,000

Role: Co-Investigator. Kelsie Forbush (PI). Agency: Department of Defense.

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.

2013 – 2014 *Development of a Vocational Interests Computer Adaptive Test*

Amount: \$1,500

Role: Principal Investigator. Agency: Robert P. Larsen Grant for Research in Career Development, University of Illinois at Urbana-Champaign. 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.

CONFERENCE PRESENTATIONS

Song, Q. C. & Tang, 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 35th Annual Conference of the Society for Industrial and Organizational Psychology*.

Song, Q. C. & Wee, S. (June, 2020). Multi-objective optimization R Shiny app for organizational research and practice. In Alexander III, L. (Co-Chair) & **Q. C. Song** (Co-Chair), *Interactive Tools: Web-Based Applications in Organizational Research and Practice*. Symposium presentation at *the 35th Annual Conference of the Society for Industrial and Organizational Psychology*.

Tang, C., Chen, Y., 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 35th Annual Conference of the Society for Industrial and Organizational Psychology*.

Tang, C., Shin, H. J., Barve, A. D., & **Song, Q. C.** (June, 2020). Using ensemble machine learning to improve assessment in personnel selection. Poster presentation at *the 35th Annual Conference of the Society for Industrial and Organizational Psychology*.

Tang², C., Chen², 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 34th 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 33rd 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 *125th 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 32nd 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 32nd 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 32nd 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 32nd 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 *31st 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 *31st 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 30th 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 29th 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

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

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

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

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

“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

AWARDS AND HONORS

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 Research 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

TEACHING EXPERIENCE

Purdue University, Assistant Professor

- PSYC473 Personnel Selection and Performance Appraisal *Spring 2020*
- Undergraduate-level course

Purdue University, Assistant Professor

- PSYC610 Multivariate Analysis in the Behavioral Sciences *Fall 2018, 2019*
- Ph.D.-level advanced statistics seminar

Purdue University, Assistant Professor

- PSYC272 Introduction to Industrial-Organizational Psychology *Spring 2019*
- Undergraduate-level course

University of Illinois at Urbana-Champaign, Instructor

- PSYC245 Introduction to Industrial/Organizational Psychology *Fall 2017 – Spring 2017*
- Undergraduate-level course

University of Illinois at Urbana-Champaign, Teaching Assistant

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

PROFESSIONAL SERVICE

Editorial Board

Journal of Applied Psychology (*incoming*)

Ad-hoc Reviewer

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

OTHER PROFESSIONAL EXPERIENCES

Google Inc.

Ph.D. Intern, Hiring Innovation (People Operations) *May, 2017 – August, 2017*

- Development of a 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.

Ph.D. Intern, Hiring Innovation (People Operations) *May, 2016 – August, 2016*

- Provided consultation on statistics and experimental design related to hiring practice.
- Evaluated hiring practices through experimental studies and psychometric research.

- Taught advanced psychometric topics through series of knowledge sharing sessions.

HumRRO: Human Resources Research Organization *November, 2015 – February, 2016*

Data Analyst (contract)

- Project title: Development of an O*NET Mini Interest Profiler (Mini-IP) for Mobile Devices: Psychometric Characteristics
- Conducted validation analysis for O*NET Mini Interest Profiler.

Confucius Institute of UIUC

May, 2015 – August, 2015

Data Analyst (contract)

- Assessed item pool of the computerized adaptive test assembly program for HSK levels 1-6, which is an international standardized exam used to rate Chinese language proficiency.
- Performed statistical analysis on large datasets to assist test calibration decisions.

PROFESSIONAL AFFILIATIONS

Society for Industrial and Organizational Psychology
Academy of Management
Association for Psychological Science

Last updated: 05/23/2020