

Q. CHELSEA SONG

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qcsong@purdue.edu

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

REFEREED PUBLICATIONS

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

Journal Articles

Song*, Q. C., Tang², C., & Wee, S. (2021) Making sense of model generalizability: A tutorial on cross-validation in R and Shiny. *Advances in Methods and Practices in Psychological Science*. doi: [10.1177/2515245920947067](https://doi.org/10.1177/2515245920947067).

Hoff*, K., Song*, Q. C., Wee*, J. M. C., Phan, J., & Rounds, J. (2020). Interest fit and job satisfaction: A systematic review and meta-analysis. *Journal of Vocational Behavior*. doi: [10.1016/j.jvb.2020.103503](https://doi.org/10.1016/j.jvb.2020.103503). *equal contribution

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](https://doi.org/10.1111/peps.12411).

Rupp*, D. C., Song*, Q. C., & Strah*², 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1017/iop.2015.66).

Book Chapters and Technical Reports

Woo*, S. E., Hickman², L., & **Song, Q. C.** (forthcoming: 2021). Evaluating data. *Data, Methods and Theory in the Organizational Sciences*. Society of Industrial and Organizational Psychology's Organizational Frontiers Series.

Song*, Q. C., Liu, M. Q., Tang², C., & Long¹, L. (2020). Big data in the workplace and talent analytics. *Big Data in Psychological Research* (pp. 319-344). 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](https://doi.org/10.13140/RG.2.1.4767.4487).

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

CONFERENCE PRESENTATIONS

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

Chaired Symposia

Song, Q. C. (2021, April). Multi-objective optimization in the workplace 2.0: Applications in selection. Symposium at the 36th Annual Conference of the Society for Industrial and

Organizational Psychology, Virtual Conference.

Alexander², L. & **Song, Q. C.** (2020, June). Interactive tools: Web-based applications in organizational research and practice. Symposium at *the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Virtual Conference.*

Song, Q. C. & Wee, S. (2020, June). Multi-objective optimization in the workplace: Addressing adverse impact in selection. Symposium at *the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Virtual Conference.*

Presentations

Tang^{*2}, C., Newman, D. A., **Song, Q. C.** & Wee, S. (2021, April). Pareto-optimal tradeoffs for three notions of test fairness: Equality, test equity, performance equity. In **Q. C. Song** (Chair), Multi-Objective Optimization in the Workplace 2.0: Applications in Selection. Symposium presentation at *the 36th Annual Conference of the Society for Industrial and Organizational Psychology.*

De Corte^{*}, W. & **Song, Q. C.** (2021, April). Pareto-optimal (PO) designs for two-stage complex selection/assignment. In **Q. C. Song** (Chair), Multi-Objective Optimization in the Workplace 2.0: Applications in Selection. Symposium presentation at *the 36th Annual Conference of the Society for Industrial and Organizational Psychology.*

Tang^{*2}, C., Hickman², L., & **Song, Q. C.**, Alexander², L. (2021, April) Comparing item-level and scale-level predictive models: A simulation. Poster presentation at *the 36th Annual Conference of the Society for Industrial and Organizational Psychology.*

Song, Q. C. & Tang, C. (2020, June). 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, Virtual Conference.*

Tang, C., Newman, D. A., & **Song, Q. C.** (2020, June). 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, Virtual Conference.*

Tang, C., Chen, Y., **Song, Q. C.**, & Newman, D. A. (2019, April). 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. (2018, July). 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. (2018, July). 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. (2018, April). 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.** (2017, August). 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. (2017, August). 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. (2017, April). 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. (2017, April). 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. (2017, April). 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. (2017, April). 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.** (2017, March). 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. (2016, April). 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. (2016, April). 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. (2015, April). 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. (2014, May). 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.** (2013, August). 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. (2012, December). Career choice in emerging adulthood. Presentation at the 15th Chinese National Convention of Psychology, Guangdong, China.

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

INVITED TALKS

Song, Q. C. (2020, November). Cross-validation. CARMA Topic Interest Group (TIG): Advanced Regression Methods. *Consortium for the Advancement for Research Methods and Analysis*. Virtual Presentation.

Song, Q. C. (2020, October). Vocational interests and person-environment fit in the workplace. *Industrial and Organizational Psychology Colloquium, Rice University*. Virtual Presentation.

Song, Q. C. (2020, February). Vocational interests and person-environment fit in the workplace. *Social Psychology Colloquium, Purdue University*. West Lafayette, IN.

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

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

Song, Q. C. (2019, September). Introduction to exploratory factor analysis in R. CARMA Overview Series: Introduction to R for Organizational Research. *Consortium for the Advancement for Research Methods and Analysis*. Virtual Presentation.

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

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

Song, Q. C. (2017, August). 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.

PUBLISHED COMPUTER PROGRAMS AND WEB APPLICATIONS

CrossValTutorial (R Shiny app) <https://qchelseasong.shinyapps.io/CrossValTutorial/>

- The web application provides an example of cross-validation using regression. The application accompanies Song, Tang, & Wee (2021) to help users to understand model generalizability and methods to assess it. Specifically, the application helps to visualize (a) model overfit, (b) how model generalizability is influenced by three factors: model complexity, sample size, and effect size, and (c) cross-validation methods: k -fold cross-validation and Monte-Carlo cross-validation.

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

“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

Hiring practices to improve diversity under selection system trade-offs (2022 – 2024). Australian Research Council. Status: Under Review. Amount: \$ 500,000 AUD. PI (Chief Investigator): Serena Wee, Co-I (Partner Investigator): Q. Chelsea Song, Daniel A. Newman.

Gender differences in the impacts of work from home on work-life balance, (05/2021 – 04/2022). Susan B. Butler Center for Leadership Excellence, Purdue University. Status: Under Review. Amount: \$ 5,000. PI: Q. Chelsea Song, Co-PI: Yunfeng Chen.

Post-acute interventions for the treatment of anorexia nervosa, (07/2021 – 06/2024). National Institute of Health. Status: Under Review. Amount: \$ 340,000. PI: Kelsie Forbush, Co-I: Q. Chelsea Song, Christopher Cushing, Sara Gould.

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.

Development of a vocational interests computerized 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.

Student Research Innovation 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

Assistant Professor, Purdue University

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|---|---------------------|
| PSY610 <i>Multivariate Analysis in the Behavioral Sciences</i> | Fall, 2018 – 2020 |
| <ul style="list-style-type: none">• Ph.D.-level advanced statistics seminar, 16 students• New course preparation | |
| PSY473 <i>Personnel Selection and Performance Appraisal</i> | Spring, 2020 – 2021 |
| <ul style="list-style-type: none">• Undergraduate-level course, 30 students• New course preparation | |

- PSY272 *Introduction to Industrial-Organizational Psychology* Spring, 2019
- Undergraduate-level course, 150 students
 - New course preparation

Instructor, University of Illinois at Urbana-Champaign

- PSY245 *Introduction to Industrial/Organizational Psychology* Fall & Spring, 2017
- Undergraduate-level course, 150 students

Teaching Assistant, University of Illinois at Urbana-Champaign

- PSY350 *Social Psychology Methods Lab* Spring, 2014 – 2015
- Undergraduate-level methods course, 50 students

- PSY332 *Personality Psychology Methods Lab* Fall, 2013 – 2014
- Undergraduate-level methods course, 50 students

STUDENT MENTORING

Doctoral Dissertation Committee

- Rachel Saef (2019; Chair: Dr. Sang Eun Woo)
The Role of Personality in Construing and Reacting to Work Situations
- Louis Hickman (in progress; Chair: Dr. Louis Tay)
Algorithmic Cognitive Ability Prediction in Video Interviews
- Nicole (Nikki) Strah (in progress; Co-Chair: Dr. Deborah Rupp)
Gender and Fairness Perception Formulation: Consideration of Rule Importance and Temporal Ordering
- Vera Du (in progress; Chair: Dr. Donald Lynam)

Master's Thesis Committee

- Sharon Lee (2020; Chair: Dr. Franki Kung)
A Needs Framework for Refugee Integration in the Workplace

JOURNAL AND GRANT REVIEWS

Editorial Board

- Journal of Applied Psychology
Organizational Research Methods

Ad-Hoc Reviewer

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

LEADERSHIP AND SERVICE

Purdue University

Ernest J. McCormick Lecture Organizer, Department of Psychological Sciences (Spring, 2021)

I-O Psychology Job Search Committee, Department of Psychological Sciences (Fall, 2019)

Diversity Council, College of Health and Human Sciences (Fall, 2018 – Spring, 2020)

PSY100 Introduction to career in I-O psychology and career experience share (Fall, 2018)

OTHER PROFESSIONAL EXPERIENCES

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

Society for Industrial and Organizational Psychology

Academy of Management

Association for Psychological Science

Last updated: 02/28/2021