David W. Braithwaite

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Skills

Education research. Specialties: assessment of instructional effectiveness and evaluations of mathematical abilities at primary/middle school and university levels.

Statistical analysis. ANOVA/ANCOVA, single and multiple linear regression, mixed-effects linear and logit models, Bayesian statistical analyses, and Bayesian model comparison, using SPSS, Excel, and *R*.

Mathematical and computational modeling of psychological processes using statistical, Bayesian, and production-system models.

Programming. Experienced with Python, JavaScript, Java, MySQL, HTML/CSS, Matlab, Visual Basic, C/C++, Scheme, and Prolog.

Project management. Experienced managing teams to conduct experiments and surveys, managing multiple projects at once, and coordinating with multiple departments.

Communication of research results. Skilled at data visualization, academic writing, and oral presentation of research results to both academic and business audiences.

Languages. Fluent in Mandarin Chinese; intermediate French.

Education

Ph.D. Psychology and Cognitive Science | 2014 | Indiana University

B.A. Mathematics | 1997 | University of Chicago

Experience

Postdoctoral Researcher | Carnegie Mellon University | 2014-present

- Conduct research in developmental psychology focusing on mathematical development
- Experienced with research in both laboratory and classroom settings
- Responsible for entire research process from conception, design, and IRB approval to execution, analysis, writeup, and submission to scholarly journals.
- Created a mathematical model of individual differences in fraction representation, a computational process model of fraction arithmetic, and an educational game to teach fraction addition.

Doctoral Researcher | Indiana University | 2009-2014

- Conducted research in cognitive psychology focusing on learning and transfer in mathematics.
- Received Outstanding Dissertation Award from Indiana University Cognitive Science Program for dissertation, entitled “Grounding Mathematics Learning.”
- Taught undergraduate course in Experimental Methods; assisted teaching of courses in Cognitive Psychology and Computer and Statistical Models in Psychology

Research Director & Deputy G.M. | Consumer Insight Research (Shanghai) | 2004-2009

- Led a research department consisting of 4 research teams (2 quantitative and 2 qualitative) and 25 research analysts.
- Responsible for monitoring research teams to ensure high-quality project design, management, analysis, and reporting, and smooth coordination with fieldwork and data processing departments.
- Developed new business and maintained relations with domestic and international clients.
- Developed research techniques and internal-use software including a proprietary technique (CoSMAT) for mining insights from qualitative research data.
- Created and conducted researcher training program.

Other positions held

- Quantitative Research Director, Consumer Behavior Research (Shanghai), 2002-2004
- Research Manager, Consumer Behavior Research (Shanghai), 2001-2002
- Research Executive, Consumer Behavior Research (Shanghai), 1999-2001
- Instructor of English as a Second Language, Shanghai University, 1997-1999

Selected Publications

Braithwaite, D. W., Tian, Jing & Siegler, Robert S. (submitted). Do children understand fraction addition? *Developmental Science*.

Braithwaite, D. W., Pyke, A. A., & Siegler, Robert S. (2017). A computational model of fraction arithmetic. *Psychological Review*.

Braithwaite, D. W. & Siegler, Robert S. (2017). Developmental changes in the whole number bias. *Developmental Science*.

Siegler, Robert S. & **Braithwaite, D. W.** (2016). Numerical development. *Annual Review of Psychology*.

Braithwaite, D. W., Goldstone, R. L., van der Maas, H. L. J., & Landy, David H. (2016). Non-formal Mechanisms in Mathematical Cognitive Development: The Case of Arithmetic. *Cognition*, 149, 40-55.

Carvalho, Paulo F.*, **Braithwaite, D. W.***, de Leeuw, J. R., Motz, B. A., & Goldstone, R. L. (2016). An in-vivo study of self-regulated study sequencing in introductory psychology courses. *PLoS ONE* 11(3): e0152115.

* First two authors contributed equally

Braithwaite, D. W. & Goldstone, R. L. (2015). Effects of variation and prior knowledge on abstract concept learning. *Cognition & Instruction*, 33(3), 226-256.

Braithwaite, D. W. & Goldstone, R. L. (2013). Flexibility in data interpretation: Effects of representational format. *Frontiers in Psychology*, *4*(December), 1–16.

Braithwaite, D. W. & Goldstone, R. L. (2013). Integrating formal and grounded representations in combinatorics learning. *Journal of Educational Psychology*, 105(2), 666–682.