

# Stephen B. Broomell, Ph.D.

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Last edited: January 26, 2026

## Research Interests

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Judgment and decision making under uncertainty; Information environments; Information aggregation; Forecasting; Methodology; Risk perception and communication.

## Education

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- 2010     Ph.D. Quantitative Psychology, University of Illinois at Urbana-Champaign
- 2007     M.A. Psychology, University of Illinois at Urbana-Champaign
- 2007     M.S. Statistics, University of Illinois at Urbana-Champaign
- 2004     B.S. double major in Mathematics and Psychology, The Ohio State University

## Academic Positions

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### Associate Professor

Dept. of Psychological Sciences, Purdue University	<i>2022 – present</i>
Dept. of Social and Decision Sciences, A small technical university in western Pennsylvania	<i>2018 – 2022</i>

### Assistant Professor

Dept. of Social and Decision Sciences, A small technical university in western Pennsylvania	<i>2011 – 2018</i>
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### Postdoctoral Research Fellow

College of Information Sciences and Technology, Pennsylvania State University	<i>2010 – 2011</i>
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## Honors, Awards, and Fellowships

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Next Generation of Hazards and Disasters Researchers Fellowship Sponsor: National Science Foundation	<i>2014–2016</i>
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Intelligence Community (IC) Postdoctoral Research Fellowship Sponsor: National Geospatial-Intelligence Agency	<i>2010–2011</i>
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Society for Multivariate Experimental Psychology Dissertation Award	<i>2009</i>
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Invited participant at the Summer Institute on Bounded Rationality ABC Research Group Berlin, Germany	<i>2008</i>
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Institutional National Research Service Award (NRSA) Pre-doctoral Fellow Sponsor: National Institutes of Health (NIH)	<i>2007–2008</i>
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Title: Quantitative Methods for Behavioral Research

## Research Grants

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Sponsor: National Science Foundation 2024 – 2027

Title: SBE-UKRI: A novel theory of ordered judgment processes.

Amount: \$590,081. Role: PI.

Sponsor: New Frontiers in Research Fund Canada 2023 – 2029

Title: NFRF-Transformation grant on enabling novel cardiac therapies with pluripotent stem cells.

Amount: \$23,665,756. Role: Co-Applicant.

Sponsor: National Science Foundation 2020 – 2021

Title: RAPID: How uncertainty about risk and conflicting messages affect preventive behaviors against Covid-19.

Amount: \$199,000. Role: Co-PI.

Sponsor: McGill Interdisciplinary Initiative in Infection and Immunity 2020

Title: Expert and Lay Perceptions of Translation of COVID-19 Treatment and Vaccine Development.

Amount: \$35,000. Role: Co-PI.

Sponsor: National Oceanic and Atmospheric Administration 2016 – 2019

Title: Lay Judgments of Environmental Cues that Signal a Tornado.

Amount: \$150,000. Role: PI.

## Publications

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\* = Papers written by a trainee under my supervision.

## Journal Articles

1. Broomell, S. B., Sloman, S., & He, L. (in press). Towards Generalizable Estimation of Behavioral Models with Parameter Dependencies. *Psychometrika*.
2. Drummond Otten, C., Anglin, S., & Broomell, S. B. (in press). Do individuals selectively apply their scientific reasoning ability when communicating about scientific evidence on polarized topics? *Journal of Experimental Psychology: Applied*.
3. \*Warren, A., Broomell, S. B., & Chen, J. (in press). Tactile Stimulus-Response Compatibility Effects: Differentiating Methodology and Frames of Reference. *American Journal of Psychology*.
4. \*Huang, S., Golman, R., & Broomell, S. B. (2024). Combining the Aggregated Forecasts: An Efficient Method for Improving Accuracy by Stacking Multiple Weighting Models. *Decision*.
5. \*Sloman, S. J., Cavagnaro, D., & Broomell, S. B. (2024). Knowing what to know: Implications of the choice of prior distribution on the behavior of adaptive design optimization. *Behavior Research Methods*.
6. \*Huang, S., Broomell, S. B., & Golman, R. (2024). A hypothesis test algorithm for determining when weighting individual judgments reliably improves collective accuracy or just adds noise. *Decision*, 11(1), 7–34. <https://doi.org/10.1037/dec0000187>

7. Broomell, S. B., & Davis-Stober, C. (2024). The Strengths and Weaknesses of Crowds to Address Global Problems. *Perspectives on Psychological Science*, 19(2), 465-476.
8. Smithson, M. & Broomell, S. B. (2024). Compositional Data Analysis Tutorial. *Psychological Methods*, 29(2), 362-378. <https://doi.org/10.1037/met0000464>
9. Anglin, S. M., Drummond Otten, C., & Broomell, S. B. (2023). Hypothesis Testing Preferences in Research Decision Making. *Collabra: Psychology*, 9(1), 73029. <https://doi.org/10.1525/collabra.73029>
10. Kane, P. B., Ward, B., Papenburg, J., Moyer, H., MacPherson, A., Broomell, S. B., & Kimmelman, J. (2022). Relationship between Lay and Expert Perceptions of COVID-19 Vaccine Development Timelines in Canada and USA. *PLOS ONE*, 17(2). <https://doi.org/10.1371/journal.pone.0262740>
11. Broomell, S. B. & Kane, P. B. (2021). Perceiving a Pandemic: Global-local Incompatibility and COVID-19 Superspreading Events. *Decision*, 8(4), 227-236. <https://doi.org/10.1037/dec0000155>
12. \*Kane, P. B. & Broomell, S. B. (2021). Investigating Lay Evaluations of Predictive Models. *Thinking & Reasoning*. <https://doi.org/10.1080/13546783.2021.1999327>
13. Ellerby, Z., Broomell, S. B., McCulloch, J. & Wagner, C. (2021). Capturing Richer Information—On Establishing the Validity of an Interval-Valued Survey Response Mode. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-021-01635-0>
14. Broomell, S. B. (2020). Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables. *Cognitive Science*, 44(4), e12831. <https://doi.org/10.1111/cogs.12831>
15. Broomell, S. B., Wong-Parodi, G., Morss, R., & Demuth, J. (2020). Do We Know Our Own Tornado Season? A Psychological Investigation of Tornado Risk Perception in the Southeast U.S. *Weather, Climate, and Society*, 12(4), 771-788. <https://doi.org/10.1175/WCAS-D-20-0030.1>
16. Broomell, S. B., Chapman, G., & Downs, J. (2020). Psychological Correlates of Prevention Behaviors During the COVID-19 Pandemic. *Behavioral Science & Policy*, 6(2), 1-8.
17. \*Kane, P. B. & Broomell, S. B. (2020). Applications of the Bias-Variance Decomposition to Human Forecasting. *Journal of Mathematical Psychology*, 98, 102417. <https://doi.org/10.1016/j.jmp.2020.102417>
18. \*Dryden, R., Morgan, M. G., & Broomell, S. B. (2020). Lay Detection of Unusual Patterns in the Frequency of Hurricanes. *Weather, Climate, and Society*, 12(3), 597-609. <https://doi.org/10.1175/WCAS-D-19-0132.1>
19. Fischhoff, B. & Broomell, S. B. (2020). Judgment and Decision Making. *Annual Review of Psychology*, 71, 331-355. <https://doi.org/10.1146/annurev-psych-010419-050747>.
20. Kane, P. B., Moyer, H., MacPherson, A., Ward, B., Papenburg, J., Broomell, S. B., & Kimmelman, J. (2020). Expert Forecasts of COVID-19 Vaccine Development Timelines. *Journal of General Internal Medicine*, 35(12), 3753-3755. <https://doi.org/10.1007/s11606-020-06244-9>.
21. Broomell, S. B., Sloman, S., Blaha, L. M., & Chelen, J. (2019). Interpreting Model Comparison Requires Understanding Model-Stimulus Relationships. *Computational Brain & Behavior*, 2(3), 233-238. <https://doi.org/10.1007/s42113-019-00052-z>.

22. Dewitt, B., Fischhoff, B., Davis, A. L., Broomell, S. B., Roberts, M., & Hanmer, J. (2019). Exclusion criteria as measurements I: Identifying invalid responses. *Medical Decision Making*, 39(6), 693–703.
23. Dewitt, B., Fischhoff, B., Davis, A. L., Broomell, S. B., Roberts, M., & Hanmer, J. (2019). Exclusion criteria as measurements II: Effects on utility and health policy implications. *Medical Decision Making*, 39(6), 704–716.
24. \*Silver, E., Broomell, S. B., Davis, A., White, D. & Krishnamurti, T. (2019). Communicating a Prognosis: A Randomized Trial of Survival Rate Language. *Journal of General Internal Medicine*, 34(10), 1990–1991. DOI: 10.1007/s11606-019-05056-w.
25. Broomell, S. B., Winkles, J.F., & Kane, P. B. (2017). The Perception of Daily Temperatures as Evidence of Climate Change. *Weather, Climate, and Society*, 9, 563–574.
26. Broomell, S. B. & Kane, P. B. (2017). Public Perception and Communication of Scientific Uncertainty. *Journal of Experimental Psychology: General*, 146(2), 286–304.
27. Harris, A., Por, H., & Broomell, S. B. (2017). Anchors and the Interpretation of the Intergovernmental Panel on Climate Changes Verbal Probability Expressions. *Climatic Change*, 140, 387–398.
28. Dewitt, B., Fischhoff, B., Davis, A., & Broomell, S. B. (2015). Environmental risk perception from visual cues: Caution and sensitivity in evaluating tornado risks. *Environmental Research Letters*, 10(12), 124009.
29. Davis-Stober, C. P., Budescu, D. V., Broomell, S. B. & Dana, J. (2015). The composition of optimally wise crowds. *Decision Analysis*, 12(3), 130–143. <http://dx.doi.org/10.1287/deca.2015.0315>.
30. Broomell, S. B., Budescu, D. V., & Por, H. H. (2015). Personal experience with climate change predicts intentions to act. *Global Environmental Change*, 32, 67–73. DOI: 10.1016/j.gloenvcha.2015.03.001.
31. Broomell, S. B. & Bhatia, S. (2014). Parameter Recovery for Decision Modeling Using Choice Data. *Decision*, 1, 252–274.
32. Budescu, D. V., Por, H., Broomell, S. B. & Smithson, M. (2014). The Interpretation of IPCC Probabilistic Statements Around the World. *Nature Climate Change*, 4, 508–512.
33. Budescu, D. V., Broomell, S. B., Lempert, R., & Keller, K. (2014). Aided and unaided decision making with imprecise probabilities. *EURO Journal on Decision Processes*, 2, 31–62. DOI: 10.1007/s40070-013-0023-4.
34. Davis-Stober, C. P., Budescu, D. V., Dana, J., & Broomell, S. B. (2014). When is a crowd wise? *Decision*, 1, 79–101.
35. †R. H. Moss, G. A. Meehl, M. C. Lemos, J. B. Smith, J.R. Arnold, J.C. Arnett, D. Behar, G.P. Brasseur, S.B. Broomell, A. J. Busalacchi, S. Dessai, K. L. Ebi, J.A. Edmonds, J. Furlow, L. Goddard, H. C. Hartmann, J. W. Hurrell, J.W. Katzenberger, D.M. Liverman, P. Mote, S. C. Moser, A. Kumar, R. S. Pulwarty, E. A. Seyler, B. L. Turner, W. M. Washington, & T. J. Wilbanks (2013). Hell and High Water: Practice-Relevant Adaptation Science. *Science*, 342, 696–698.  
†Authorship order starts with primary authors followed by secondary authors ordered alphabetically.
36. Roy, M. M., Liersch, M. J. & Broomell, S. B. (2013). People believe that they are prototypically good and bad. *Organizational Behavior and Human Decision Processes*, 122(2), 200–213. Doi: 10.1016/j.obhdp.2013.07.004.

37. Smithson, M., Budescu, D. V., Broomell, S. B., & Por, H. (2012). Never say “not:” Impact of negative wording in probability phrases on imprecise probability judgments. *International Journal of Approximate Reasoning*, 53(8), 1262–1270. DOI:10.1016/j.ijar.2012.06.019.
38. Budescu, D. V., Por, H., & Broomell, S. B. (2012). Effective Communication of Uncertainty in the IPCC Reports. *Climatic Change*, 113(2), 181–200. DOI: 10.1007/s10584-011-0330-3.
39. Broomell, S. B., Budescu, D. V., & Por, H. (2011). Pair-wise Comparisons of Multiple Models. *Judgment and Decision Making*, 6, 821–831.
40. Broomell, S. B., & Budescu, D. V. (2009). Why are experts correlated? Decomposing correlations between judges. *Psychometrika*, 74(3), 531–553.
41. Budescu, D. V., Broomell, S. B., & Por, H. (2009). Improving communication of uncertainty in the reports of the intergovernmental panel on climate change. *Psychological Science*, 20, 299–308.

## Invited Papers and Book Chapters

42. Broomell, S. B., Ho, E., Benjamin, D. M., & Budescu, D. V. (2025). Expert Judgment and Communication of Uncertainty. In L. Mearns, C. Forest, H. Fowler, R. Lempert, & R. Wilby (Eds.), *Uncertainty in Climate Change Research: An Integrated Approach*. Springer.
43. Broomell, S. B. & Chapman, G. B. (2021). Looking Beyond Cognition for Risky Decision Making: COVID-19, the Environment, and Behavior. *Journal of Applied Research in Memory and Cognition*.
44. Broomell, S. B. (2020). Using a Bifocal Lens Model to Identify Global-Local Incompatibility. *The Brunswick Society Newsletter*, 35, 5–7.

## Refereed Conference Papers

45. Broomell, S. B., & Wagner, C. (2024). The Joint Weighted Average (JWA) Operator. *The 11th International Conference on Soft Methods in Probability and Statistics*. September 3-6, Salzburg, Austria.
46. \*Buffum, D., Broomell, S. B., Wagner, C., & Anderson, D. (2024). The Compositional Nature of Weights. *The 20th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems*. July 22nd-26th, Lisbon, Portugal.  
<https://ipmu2024.inesc-id.pt/files/paper3em>
47. \*Sloman, S. J., Oppenheimer, D. O., Broomell, S. B., & Shalizi, C. R. (2022). Characterizing the robustness of Bayesian adaptive experimental designs to active learning bias. *The ICML2022 Workshop on Adaptive Experimental Design and Active Learning in the Real World*: Baltimore, USA.
48. \*Sloman, S. J., Broomell, S. B., & Kusuma, T. (2020). Diagnosing pervasive issues with parameter estimation. *The 42nd Annual Conference of the Cognitive Science Society*.  
<https://cognitivesciencesociety.org/cogsci20/papers/0467/0467.pdf>
49. Hibshi, H., Breaux, T., & Broomell, S. B. (2015, August). Assessment of Risk Perception in Security Requirements Composition. In 2015 IEEE 23rd International Requirements Engineering Conference (RE) (pp. 146–155). IEEE.

## Working Papers

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Broomell, S. B., Sommer, J., Anglin, S., & Drummond Otten, C. (in preparation). Reconsidering Belief Updating from a Measurement Perspective.

## Invited Talks - Presenter in Boldface

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**Broomell, S. B.** (2025). *Environments and Collective Judgment Accuracy*. Invited talk presented at the NSF funded Collective Learning Workshop at the Complexity Science Hub, Vienna, Austria.

**Broomell, S. B.** (2023). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk presented at the 2023 Digital Futures *Humanizing the Sustainable Smart City Workshop* at the KTH Royal Institute of Technology, Stockholm, Sweden.

**Broomell, S. B.** (2023). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk presented at *Decisions, Cognition, and the Climate Crisis* at The Ohio State University, Columbus, OH.

**Broomell, S. B.** (2023). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk presented at the Rutgers University Department of Psychological Sciences, New Brunswick, NJ.

**Broomell, S. B.** (2021). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk presented at the Center for Adaptive Rationality, Berlin, Germany.

**Broomell, S. B.** (2021). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk presented at the University of Illinois Department of Psychology, Urbana-Champaign, IL.

**Broomell, S. B.** (2020). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Invited talk for the Decision Processes Colloquia at the University of Pennsylvania, Wharton School: Philadelphia, PA.

**Broomell, S. B.** (2020). *A Psychological Investigation of Tornado Risk Perceptions*. Invited talk for the Earth System Science Seminar at Stanford University: Stanford, CA.

**Broomell, S. B.** (2018). *The Connection Between Uncertainty, Personal Experience, and Mitigation Intentions for Global Warming*. Invited talk at the University of Pennsylvania, Wharton Risk Management and Decision Processes Center: Philadelphia, PA.

**Broomell, S. B.** (2018). *Studies of Uncertainty and Science*. Invited talk at the University of Warwick for the Warwick Business School (WBS): Coventry, United Kingdom.

**Broomell, S. B.** (2018). *Studies of Uncertainty and Science*. Invited talk at the University of Nottingham Department of Computer Science: Nottingham, United Kingdom.

**Broomell, S. B.** (2018). *Studies of Uncertainty and Science*. Invited talk at the University College London Department of Experimental Psychology: London, United Kingdom.

**Broomell, S. B.** (2018). *The Perception of Daily Temperatures as Evidence of Climate Change*. Invited talk at the University of Oklahoma Department of Psychology: Norman, Oklahoma.

**Broomell, S. B.** (2016). *Risk Perception and Communication*. Invited talk for the Executive Short Course: Risk, Network Analysis, and Geopolitics held by the Institute for Strategic Analysis:

October, Washington D.C.

**Broomell, S. B.**, Budescu, D. V., Por, H. (2016). *Personal Experience with Climate Change Predicts Intentions to Act*. Invited talk organized at Georgetown University McDonough School of Business: Washington D.C.

**Broomell, S. B.** (2016). *Risk Perception and Communication*. Invited talk for the Executive Short Course: Decision Science, Risk, and Network Analytics held by the Institute for Strategic Analysis: May, Washington D.C.

**Broomell, S. B.** (2015). *The Psychology of Meteorology*. Invited talk at the 43rd Conference on Broadcast Meteorology and the 3rd Conference on Weather Warnings and Communication: Raleigh, NC.

**Broomell, S. B.** (2015). *Risk Perception and Communication*. Invited talk for the Executive Short Course on Risk held by the Institute for Strategic Analysis: October, Washington D.C.

**Broomell, S. B.** (2014). *Risk communication under uncertainty: Climate Change*. Invited talk presented at the 13th Annual Social Equity Leadership Conference: Pittsburgh, PA.

**Broomell S. B.** (2013). *The Psychology of Risk Communication*. Invited talk presented at the Center for Advancing Risk Assessment Science and Policy: Washington, D.C.

**Broomell, S.** (2012). *Methods for Communicating Uncertainty: Levels of Confidence vs. Numerical Ranges*. Invited talk presented at the meeting on Science for Climate Change Adaptation at the Aspen Global Change Institute: Aspen, CO.

**Broomell, S.**, & Budescu, D. V. (2009). *Why are Experts Correlated? Understanding Inter-Judge Correlations*. Invited talk presented at the University of Illinois Department of Psychology: The Knowledge for All Lecture Series.

**Budescu, D. V.**, & Broomell, S. B. (2005). *The effects of presentation format and decision aids on decisions under deep uncertainty*. Invited presentation at the Meeting on Abrupt Climate Change: Aspen Global Change Institute.

## **Competitive Conference Talks - Presenter in Boldface**

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**Drummond Otten, C.**, Anglin, S. & Broomell, S. B. (2024). Drawing Different Conclusions from the Same Evidence: Belief in Hydroxychloroquine During COVID-19. Talk presented as part of the Division 3 Symposium: *Psychological Factors Related to Public Misunderstanding and Mistrust of Science* at the American Psychological Association Convention, Seattle, WA.

**Broomell, S. B.** & Davis-Stober, C. p. (2024). The Strengths and Weaknesses of Crowds to Address Global Problems. Talk presented as part of the Division 3 Symposium: *Psychological Factors Related to Public Misunderstanding and Mistrust of Science* at the American Psychological Association Convention, Seattle, WA.

**Broomell, S. B.**, Sloman, S., & He, L. (2023). Sampling Distributions for Cognitive Models. Talk presented at Subjective Probability, Utility, and Decision Making, Vienna, Austria.

**Drummond Otten, C.**, Anglin, S. & Broomell, S.B. (2023). Do individuals selectively engage their analytical reasoning abilities? Talk presented at the Society for Risk Analysis, Washington, DC.

**Drummond Otten, C.**, Anglin, S., & Broomell, S. (2022). Drawing Different Conclusions from the Same Evidence: Belief in Hydroxychloroquine During the COVID-19 Pandemic. Paper presented at the Society for Risk Analysis, Tampa, FL.

**Broomell, S. B.** & Kane, P. B. (2021). *Perceiving a Pandemic: Global-local Incompatibility and COVID-19 Superspreading Events*. Talk presented at the 27th International Meeting of the Brunswik Society, Virtual.

**Broomell, S. B.** & Kane, P. B. (2021). *Perceiving a Pandemic: Global-local Incompatibility and COVID-19 Superspreading Events..* Talk presented at the Society for Mathematical Psychology, Virtual.

**Sloman, S. J.**, Broomell, S. B., & Oppenheimer, D. (2020). *Using parameter contours to achieve more robust model estimation*. Talk presented at the Society for Mathematical Psychology, Virtual.

**Huang, S.**, Broomell, S. B., & Golman, R. (2020). *Getting More Wisdom from the Crowd: When Weighting Individual Judgments Reliably Improves Accuracy or Just Adds Noise*. Talk presented at the 57th Edwards Bayesian Research Conference at California State University: Fullerton, CA.

**Kane P.** & Broomell, S. B. (2019). *Applications of the Bias-Variance Decomposition to Human Forecasting*. Talk presented at the Society for Judgment and Decision Making: Montreal, Canada.

**Broomell, S. B.**, He, L., & Bhatia, S. (2019). A numerical investigation of parameter correlations in choice models. Talk presented at Subjective Probability, Utility, and Decision Making: Amsterdam, The Netherlands.

**Broomell, S. B.** (2019). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Talk presented at the Society for Mathematical Psychology: Montreal, Canada.

**Huang, S.**, Golman, R., & Broomell, S. B. (2019). *Getting More Wisdom from the Crowd: When Weighting Individual Judgments Reliably Improves Accuracy or Just Adds Noise*. Talk presented at the 14th Tinbergen Institute Conference: Bayesian Crowd. Rotterdam, Netherlands.

**Broomell, S. B.**, Winkles, J. F., & Kane, P. B. (2017). *The Perception of Daily Temperatures as Evidence of Climate Change*. Talk presented at Subjective Probability, Utility, and Decision Making 26: Haifa, Israel.

**Kane, P.** & Broomell, S. B. (2015). *Predicting Clinical Forecasting Errors with Local Estimators*. Talk presented at the Society for Judgment and Decision Making: Chicago, IL.

**Broomell, S. B.**, Budescu, D. V., Por, H. (2015). *Personal Experience with Climate Change Predicts Intentions to Act* presented as part of the *Psychological Responses to Climate Change Symposium*. Talk presented at the Association for Psychological Science 27th Annual Convention: New York, NY.

**Davis-Stober, C. P.**, Budescu, D. V., Dana, J., & Broomell, S. B. (2014). *When is a crowd wise?* Talk presented at the Collective Intelligence Conference: Cambridge, MA.

**Broomell, S. B.** & Bhatia, S. (2013). *Parameter Recovery for Decision Modeling Using Choice Data*. Talk presented at the Society for Judgment and Decision Making: Toronto, Canada.

**Budescu, D. V.**, Por, H., Broomell, S., & Smithson, M. (2013). *A cross-national study of un-*



*certainty and perceptions of global climate change*. Talk presented at the Society of Multivariate Experimental Psychology: St. Petersburg, FL.

**Broomell, S. B.** & Bhatia, S. (2013). *Parameter Recovery for Decision Modeling Using Choice Data*. Talk presented at Subjective Probability, Utility, and Decision Making 24: Barcelona, Spain.

**Broomell, S. B.**, Budescu, D. V., & Por, H. (2013). *Predicting mitigation action: A cross-national analysis*. Talk presented at Subjective Probability, Utility, and Decision Making 24: Barcelona, Spain.

**Budescu, D. V., Por, H.**, Balassiano, M., Barbopoulos, I., Broomell, S., Fuller, J., Gonzalez-Vallejo, C., Hadar, L., Hansla, A., Hoelzl, E., Hichy, Z., Juanchich, M., Maydeu-Olivares, A., Nakamura, K., Onkal, D., Sirota, M., Smithson, M., Sokolowska, J., Villejoubert, G., & Witteman, C. (2013). *The 2012 cross-national study of uncertainty and perceptions of Global Climate Change*. Talk presented at Subjective Probability, Utility, and Decision Making 24: Barcelona, Spain.

**Broomell, S.**, Budescu, D. V., & Por, H. (2012) *The Impact of Beliefs, Ideology, and Understanding of Climate Change on Mitigation Action*. Talk presented at the Society for Judgment and Decision Making: Minneapolis, MI.

**Smithson, M.**, Budescu, D. V., Broomell, S. B., & Por, H. (2011) *Never Say "Not": Impact of Negative Wording in Probability Phrases on Imprecise Probability Judgments*. Talk presented at the Seventh International Symposium on Imprecise Probability: Theories and Applications: Innsbruck, Austria.

**Por, H.**, Budescu, D. V., & Broomell, S. B. (2010). *Effective Communication of Uncertainty in the Intergovernmental Panel on Climate Change (IPCC) Reports*. Talk presented at the Society for Judgment and Decision Making: St. Louis, MO.

**Broomell, S. B.**, Por, H., & Budescu, D. V. (2009). *Understanding of Global Climate Change: Beliefs vs. Actions*. Talk presented at the Society for Judgment and Decision Making: Boston, MA.

**Budescu, D. V.** & Broomell, S. B. (2008). *Why are Experts Correlated? Decomposing Inter-judge Correlations*. Talk presented at Behavioral Decision Research in Management Conference: San Diego, CA.

**Broomell, S.**, & Budescu, D. V. (2007). *Why are Experts Correlated? Understanding Inter-judge Correlations*. Talk presented at the Society for Judgment and Decision Making: Long Beach, CA.

Budescu, D. V., Broomell, S., **Lempert, R.**, & Keller, K. (2007). *Effects of Presentation Format on Judgments and Decisions Under Deep Uncertainty*. Talk presented at the Society for Judgment and Decision Making: Long Beach, CA.

**Budescu, D. V.** & Broomell, S. B. (2007). *Why are Experts Correlated? Decomposing Inter-judge Correlations*. Talk Presented at annual meeting of the Society of Multivariate Experimental Psychology: Chapel Hill, NC.

**Broomell, S. B.**, & Budescu, D. V. (2007). *Why are Experts Correlated? Understanding Inter-Judge Correlations*. Talk presented at the Society for Mathematical Psychology: Irvine, CA.

Budescu, D. V., **Broomell, S. B.**, Lempert, R., & Keller, K. (2007). *Decisions with Imprecise Probabilities: Confronting models with data*. Talk presented at Subjective Probability, Utility, and Decision Making 21: Warsaw, Poland.

Budescu, D. V., Broomell, S., **Lempert, R.**, & Keller, K. (2007). *Effects of Presentation Format on Judgments and Decisions Under Deep Uncertainty*. Talk presented at the Society for Judgment and Decision Making: Long Beach, CA.

## Poster Presentations - Presenter in Boldface

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**Warren, A.D.**, Broomell, S.B., Chen, J., & Proctor, R.W. (2024). Competing frames of reference using vibrotactile stimuli for the Simon effect. Poster presented at the Psychonomic Society Annual Meeting, New York, NY.

**Drummond Otten, C.**, Anglin, S. & Broomell, S.B. (2023). Do individuals selectively engage their analytical reasoning abilities? Poster presented at the Society for Judgment and Decision-Making, San Francisco, CA.

**Sloman, S. J.**, Oppenheimer, D. O., Broomell, S. B., & Shalizi, C. R. (2022). Characterizing the robustness of Bayesian adaptive experimental designs to active learning bias. Poster presented at the ICML2022 Workshop on Adaptive Experimental Design and Active Learning in the Real World: Baltimore, USA.

**Drummond Otten, C.**, Anglin, S., & Broomell, S. (2022, November). Drawing Different Conclusions from the Same Evidence: Belief in Hydroxychloroquine During the COVID-19 Pandemic. Poster presented at the Society for Judgment and Decision Making, San Diego, CA.

**Broomell, S. B.** & Kane, P. B. (2021). Perceiving a Pandemic: Global-local Incompatibility and COVID-19 Superspreading Events. Poster presented at the Society for Judgment and Decision Making: Virtual.

**Broomell, S. B.** & Kane, P. B. (2021). Perceiving a Pandemic: Global-local Incompatibility and COVID-19 Superspreading Events. Poster presented at Subjective Probability, Utility, and Decision Making: Virtual.

**Broomell, S. B.** (2019). *Global-Local Incompatibility: The Misperception of Reliability in Judgment Regarding Global Variables*. Poster presented at the Society for Judgment and Decision Making: Montreal, Canada.

**Drummond, C.**, Anglin, S., & Broomell, S. (2019). *Do individuals selectively engage their analytical reasoning abilities?* Poster presented at the Society for Judgment and Decision Making: Montreal, Canada.

Drummond, C., Anglin, S., & **Broomell, S.** (2019). *Do individuals selectively engage their analytical reasoning abilities?* Poster presented at Subjective Probability, Utility, and Decision Making: Amsterdam, The Netherlands.

**Ellerby, Z.**, McCulloch, J., Broomell, S. & Wagner, C. (2019). *The added-value of interval-values - capturing individual response uncertainty*. Poster presented at the Society for Mathematical Psychology: Montreal, Canada.

**Huang, S.**, Golman, R. & Broomell, S. B. (2019). *Getting More Wisdom from the Crowds: When Weighting Individual Judgments Reliably Improves Accuracy or Just Adds Noise*. Poster presented at the Collective Intelligence Conference: Pittsburgh, PA.

Kane P. & **Broomell, S. B.** (2018). *Application of the Bias-Variance Decomposition to Human Forecasting*. Poster presented at the Society for Judgment and Decision Making: New Orleans, LA.

- Anglin, S.**, Broomell, S.B., Drummond, C. (2018). *Confirmatory vs. Disconfirmatory Hypothesis Testing Strategies*. Poster presented at the Society for Judgment and Decision Making: New Orleans, LA.
- Broomell, S. B.**, Moss, R., & Mearns, L. (2016). *An Empirical Test of Communicating Uncertain Geographic Climate Projections*. Poster presented at the Society for Judgment and Decision Making: Boston, MA.
- Broomell, S. B.**, Winkles, J.F., & Kane P. (2015). *The Perception of Daily Temperatures as Evidence of Climate Change*. Poster presented at the Society for Judgment and Decision Making: Chicago, IL.
- Dewitt, B.**, Fischhoff, B., Davis, A. & Broomell, S. B. (2015). *Tornado Risk Perception from Visual Cues*. Poster presented at the Society for Judgment and Decision Making: Chicago, IL.
- Broomell, S. B.**, & Kane P. (2013). *Public Perception of Scientific Uncertainty*. Poster presented at the Society for Judgment and Decision Making: Toronto, Canada.
- Broomell, S. B.**, Budescu, D. V., & Por, H. (2011). *Pair-wise comparisons of multiple decision models*. Poster presented at the Society for Judgment and Decision Making: Seattle, WA.
- Broomell, S. B.** & McGill, W. (2011). *A Social Network Simulation of Information Overlap and Confidence in Intelligence Correspondence*. Poster presented at the 11th Annual Intelligence Community Postdoctoral Research Fellowship Colloquium: Washington D.C.
- Broomell, S. B.** (2010). *Sampling Processes in Experience Based Decision Making*. Poster presented at the Society for Judgment and Decision Making: St. Louis, MO.
- Broomell, S. B.**, Budescu, D. V., & Por, H. (2009). *Attitudes Toward Global Climate Change*. Poster presentation at Planet U: The Human Story of Climate Change: Urbana-Champaign, IL.
- Broomell, S. B.** & Budescu, D. V. (2008). *Comparing Individual and Group Level Parameters of Choice Models*. Poster presentation at the Society for Judgment and Decision Making: Chicago, IL.
- Shaffer, V. A.**, Templin, S., Broomell, S. B., & Hulsey, L. (2008). *Perceptions of physicians using diagnostic support systems*. Poster presented at Society for Medical Decision Making: Philadelphia, PA.
- Broomell, S. B.**, & Budescu, D. V. (2006). *Exploring Imprecise Probabilities*. Poster presented at the Society for Judgment and Decision Making: Houston, TX.
- Arkes, H. R.**, Shaffer, V. A., White, R., Broomell, S. B., Avner, N., & Anthony, E. (2004). *Debiasing the sunk cost effect by 'punctuating' mental accounts*. Poster presented at the Society for Judgment and Decision Making: Minneapolis, MN.
- Shaffer, V. A.**, Arkes, H. R., White, R., Broomell, S. B., Avner, N., Starrmann, A., Braun, A., & Anthony, E. (2004). *Preference reversals in cash versus non-cash incentives*. Poster presented at the Society for Judgment and Decision Making: Minneapolis, MN.

## Students Advised

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Corey Nack - Doctoral Thesis

2024

Title: Escaping the Metacontrol Seesaw: Double dissociations between flexibility and stability

Purdue University, Department of Psychological Sciences

Ashley Warren - Masters Thesis 2024  
Title: Competing Frames of Reference using Vibrotactile Stimuli for S-R Mapping Effects  
Purdue University, Department of Psychological Sciences

Li Xin Lim - Doctoral Thesis 2023  
Title: The Interaction of Working Memory and Uncertainty (Mis)Estimation in Context-dependent Outcome Estimation  
Purdue University, Department of Psychological Sciences

Sabina Sloman - Doctoral Thesis 2022  
Title: Towards robust Bayesian adaptive design methods for the study of human behavior  
Carnegie Mellon University, Department of Social and Decision Sciences

Shu Huang - Doctoral Thesis 2022  
Title: Harnessing the Wisdom of Crowds  
Carnegie Mellon University, Department of Social and Decision Sciences

Lt. Col. Ryan Kenny - Doctoral Thesis 2022  
Title: Why Some are Better Than Others at Detecting Social Bots: Comparing Baseline Performance to Performance with Aids and Training  
Carnegie Mellon University, Department of Engineering and Public Policy

Erin Bugbee - Masters Thesis 2022  
Title: Deciding When to Stop: Cognitive Models of Sequential Decisions in Optimal Stopping Tasks  
Carnegie Mellon University, Department of Social and Decision Sciences

Keela Thomson - Doctoral Thesis 2021  
Title: The other half of human intelligence: Individual differences in type 1 cognitive ability  
Carnegie Mellon University, Department of Social and Decision Sciences

Yanran Yang - Doctoral Thesis 2021  
Title: Graphic communication about scientific uncertainties: Examples from influenza and COVID-19 forecasts  
Carnegie Mellon University, Department of Engineering and Public Policy

Erin McCormick - Doctoral Thesis 2021  
Title: Adaptation to change in decision making  
Carnegie Mellon University, Department of Social and Decision Sciences

Timothy Kusuma - Undergraduate Honors Thesis 2021  
Title: Goals in Misinformation  
Carnegie Mellon University, Department of Economics; Statistics and Data Science

Shu Huang - Masters Thesis 2019  
Title: Getting More Wisdom from the Crowd: When Weighting Individual Judgments Reliably Improves Accuracy or Just Adds Noise  
Carnegie Mellon University, Department of Social and Decision Sciences

Hanan Hibshi - Doctoral Thesis 2018  
Title: Composite Security Requirements in the Presence of Uncertainty  
Carnegie Mellon University, School of Computer Science

Patrick Kane - Doctoral Thesis	<i>2017</i>
Title: Investigating Lay Evaluations of Predictive Models	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Caitlin Drummond - Doctoral Thesis	 <i>2017</i>
Title: How Do Nonscientists Reason about Scientific Evidence? Development, Validation, and Application of the Scientific Reasoning Scale	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Casey Canfield - Doctoral Thesis	 <i>2016</i>
Title: Using Vigilance to Quantify Human Behavior for Phishing Risk	
Carnegie Mellon University, Department of Engineering and Public Policy	
 Barry Dewitt - Masters Thesis	 <i>2015</i>
Title: Tornado Risk Perception from Visual Cues	
Carnegie Mellon University, Department of Engineering and Public Policy	
 Nathanial R. Peterson - Doctoral Thesis	 <i>2015</i>
Title: A Behavioral Decision Research Approach to College Graduation Risk	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Erin McCormick - Masters Thesis	 <i>2015</i>
Title: Now Reverse Everything: Detecting Deception with a Response Conflict-Based Cognitive Load Manipulation	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Patrick Kane - Masters Thesis	 <i>2014</i>
Title: Clinical Versus Actuarial Forecasting: Predicting Errors with Local Estimators	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Caitlin Drummond - Masters Thesis	 <i>2014</i>
Title: How Capable are Laypeople of Assessing the Validity of Scientific Evidence? Development and Validation of The Critical Scientific Thinking Scale	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Tamar Feigenbaum - Undergraduate Honors Thesis	 <i>2014</i>
Title: Consumer Decision Making and Price Partitioning	
Carnegie Mellon University, Department of Social and Decision Sciences	
 Alycia Chin - Masters Thesis	 <i>2012</i>
Title: The effect of readability on responses to probability questions	
Carnegie Mellon University, Department of Social and Decision Sciences	

## Teaching Experience

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Purdue University. 2022–present  
Psychology 39200 Judgment and Decision Making  
Psychology 60601 ANOVA

University of Illinois at Urbana-Champaign. 2008–2009  
Psychology 406 Introductory Graduate Statistics I  
Psychology 407 Introductory Graduate Statistics II  
Psychology 235 Introductory Undergraduate Statistics

## Professional Service

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### Associate Editor

*Thinking & Reasoning* - Taylor & Francis 2024 – present

### Editorial Board Member

*Decision* - American Psychological Association 2015 – present  
*Thinking & Reasoning* - Taylor & Francis 2020 – 2024

### External Committees

Author Committee  
United Nations Global Assessment Report (GAR 22) on Disaster Risk 2022  
[www.undrr.org/GAR2022](http://www.undrr.org/GAR2022)  
Planning Committees  
The Society of Judgment and Decision Making & European Association for Decision Making  
Virtual Symposium Committee 2024 - present  
National Academies of Sciences Engineering and Medicine 2018  
Exploring Medical and Public Health Preparedness for a Nuclear Incident: A Workshop  
Technical Advisory Committee  
Consortium for Resilient Gulf Communities 2015 – 2017

### Purdue University Committees

College of Health and Human Sciences Faculty Affairs Committee 2024 - present  
Psychological Sciences Graduate Education Committee 2026 - present  
Psychological Sciences Faculty Recruiting Committee 2022, 2024  
Psychological Sciences Undergraduate Education Committee 2022

### Conference Referee

Society for Judgment and Decision Making 2014, 2019, 2024

### Journal Referee

*American Political Science Review; Applied Cognitive Psychology; British Journal of Mathematical and Statistical Psychology; Cognition; Cognitive Psychology; Cognitive Science; Computational Brain & Behavior; Decision; Global Environmental Change; Journal of Experimental Psychology: Applied; Journal of Experimental Psychology: General; Journal of Mathematical Psychology; Journal of Risk Research; Judgment and Decision Making; Management Science; Medical Decision Making; Nature Climate Change; Operations Research; Perspectives on Psychological Science; PLOS One;*

*PNAS; Psychological Methods; Psychological Review; Psychological Science; Risk Analysis; Science; Social Psychology and Personality Science; Thinking & Reasoning; Weather, Climate, & Society.*