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Center for Adaptive Rationality (ARC)
Max Planck Institute for Human Development
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Research statement & short bio

I study how to boost human judgment and decision making online and offline by understanding human and machine behavior. To this end, I combine insights and methods from cognitive science, collective intelligence ("wisdom of crowds"), heuristics, and algorithms. In addition to basic research, I also work on applications in medical decision making, meteorology, and digital environments.

I am the head of the research area "boosting decision making" at the Center for Adaptive Rationality at the Max Planck Institute for Human Development in Berlin. In 2010 I received the Hillel Einhorn New Investigator Award of the Society for Judgment and Decision Making. My research has been covered in the popular press (e.g., *Scientific American*) and appears in academic and popular science books (incl. Tetlock and Garner's "Superforecasting"). I studied psychology, management, and computer science, and received my psychology doctorate in 2009 from the University of Basel.

Five selected, recent publications

* equal contribution / shared authorship

Litvinova, A., **Herzog**, S. M., Kall, A. A., Pleskac, T. J., & Hertwig, R. (in press). How the "wisdom of the inner crowd" can boost accuracy of confidence judgments. *Decision*.
preprint at: <https://doi.org/10.31234/osf.io/ngweh>

Analytis*, P. P., Barkoczi*, D., & **Herzog***, S. M. (2018). Social learning strategies for matters of taste. *Nature Human Behavior*, 2, 415–424. doi:10.1038/s41562-018-0343-2

Herzog, S. M., & von Helversen, B. (2018). Strategy selection versus strategy blending: A predictive perspective on single- and multi-strategy accounts in multiple-cue estimation. *Journal of Behavioral Decision Making*, 31, 233–249. doi:10.1002/bdm.1958

Moussaïd, M., **Herzog**, S. M., Kämmer, J. E., & Hertwig, R. (2017). Reach and speed of judgment propagation in the laboratory. *Proceedings of the National Academy of Sciences of the United States of America*, 114, 4117–4122. doi:10.1073/pnas.1611998114

Herzog, S. M., Lim, H. W., Williams, M. S., de Maddalena, I. D., Osterwalder, U., & Surber, C. (2017). SPF communication of sunscreen effectiveness: A web-based study of perception of effectiveness by dermatologists. *JAMA Dermatology*, 153, 348–349. doi:10.1001/jamadermatol.2016.4924

Education

Ph. D., Dr. phil. (*summa cum laude*/with highest praise), dissertation: „The power of fluency and aggregation: Two case studies in the cognitive science of human judgment“, Department of Psychology, University of Basel, 2005–2009

Master of Science in Psychology (*summa cum laude*/with highest praise); major in social psychology, consumer and organizational behavior, Department of Psychology, University of Basel, Switzerland, 2003–2005

Subsidiary degree in managerial economics, studies in computer sciences, Wirtschaftswissenschaftliches Zentrum (WWZ), University of Basel, Switzerland, 2001–2005

Bachelor of Science in Psychology (*magna cum laude*/with great praise), Department of Psychology, University of Basel, Switzerland, 2000–2003

Managerial economics and computer sciences, Wirtschaftswissenschaftliches Zentrum (WWZ), University of Basel, Switzerland, 1999–2000

Positions

Head of Research Area Boosting Decision Making, Center for Adaptive Rationality (ARC), Max Planck Institute for Human Development, Berlin, 2019–

Researcher, Center for Adaptive Rationality (ARC), Max Planck Institute for Human Development, Berlin, 2012–2019

Researcher, Cognitive and Decision Sciences, Department of Psychology, University of Basel, 2009–2012

Graduate student, Cognitive and Decision Sciences, Department of Psychology, University of Basel, Switzerland, 2005–2009

Awards

Hillel Einhorn New Investigator Award 2010 for the paper Herzog & Hertwig (2009), Society for Judgment and Decision Making; see <http://www.sjdm.org/history.html>

Steven Karger Department of Psychology Award 2009 for dissertation ("The power of fluency and aggregation: Two case studies in the cognitive science of human judgment", Herzog, 2008), CHF 5'000, Department of Psychology, University of Basel.

"*The Wisdom of Crowds*" *within and across people*. Travelling grant, 2009: Swiss National Foundation („International short research visits“). CHF 3'200.

1st place in *The Technion Prediction Tournament*
Condition E-sampling: Erev et al., 2008 (<http://tx.technion.ac.il/~erev/Comp/Comp.html>)

Grants

„Dialectical bootstrapping: A new paradigm to Improve individual judgment“, Swiss National Foundation project (100014_129572), 2011-2017, CHF 270'925, Department of Psychology, University of Basel, and Center for Adaptive Rationality, Max Planck Institute for Human Development, Berlin (<http://p3.snf.ch/Project-129572>)

Publications

* equal contribution / shared authorship

Herzog, S. M., & Hertwig, R. (in press). Kompetenzen mit "Boosts" stärken [Strengthening competencies with boosts]. In C. Bala & W. Schuldzinski (Eds.), *Verbraucherbildung: Ein weiter Weg zum mündigen Verbraucher* [Consumer education: A long way to the mature consumer] (pp. 19-40). Düsseldorf: Verbraucherzentrale. doi: 10.15501/978-3-86336-924-8_2

Kurvers, R., **Herzog**, S. M., Hertwig, R., Krause, J., Moussaid, M., Argenziano, G., ... Wolf, M. (in press). How to detect high-performing individuals and groups: Decision similarity predicts accuracy. *Science Advances*. doi: 10.1126/sciadv.aaw9011

Litvinova, A., **Herzog**, S. M., Kall, A. A., Pleskac, T. J., & Hertwig, R. (in press). How the "wisdom of the inner crowd" can boost accuracy of confidence judgments. *Decision*. preprint at: <https://doi.org/10.31234/osf.io/ngweh>

Fleischhut, N. & **Herzog**, S. M. (2019). Wie lässt sich die Unsicherheit von Vorhersagen sinnvoll kommunizieren? [How can forecast uncertainty be usefully communicated?] In Thomas Kox & Lars Gerhold (Eds.) *Wetterwarnungen: Von der Extremereignisinformation zu Kommunikation und Handlung. Beiträge aus dem Forschungsprojekt WEXICOM* [Weather warnings: From extreme event information to communication and action. Contribution from the research project WEXICOM] (Schriftenreihe Sicherheit, 25). Berlin: Forschungsforum Öffentliche Sicherheit, Freie Universität Berlin, 63–81.

Fundel*, V. J., Fleischhut*, N., **Herzog***, S. M., Göber, M., & Hagedorn, R. (2019). Promoting the use of probabilistic weather forecasts through a dialogue between scientists, developers, and end-users. *Quarterly Journal of Royal Meteorological Society*, 145 (Suppl. 1), 210– 231. doi:10.1002/qj.3482

Herzog, S. M., Litvinova, A., Yahosseini, K. S., Tump, A. N., & Kurvers, R. H. J. M. (2019). The ecological rationality of the wisdom of crowds. In R. Hertwig, T. J. Pleskac, T. Pachur, & The Center for Adaptive Rationality, *Taming uncertainty* (pp. 245-262). Cambridge, MA: MIT Press.

Herzog, S. M., & Hills, T. T. (2019). Mediation centrality in adversarial policy networks. *Complexity*, Article ID 1918504. doi:10.1155/2019/1918504

Frey, R., **Herzog**, S. M., & Hertwig, R. (2018). Deciding on behalf of others: A population survey on procedural preferences for surrogate decision making. *BMJ Open* 2018;8:e022289. doi:10.1136/bmjopen-2018-022289

Analytis*, P. P., Barkoczi*, D., & **Herzog***, S. M. (2018). Social learning strategies for matters of taste. *Nature Human Behavior*, 2, 415–424. doi:10.1038/s41562-018-0343-2

Herzog, S. M., & von Helversen, B. (2018). Strategy selection versus strategy blending: A predictive perspective on single- and multi-strategy accounts in multiple-cue estimation. *Journal of Behavioral Decision Making*, 31, 233–249. doi:10.1002/bdm.1958

Herzog, S. M., Lim, H. W., Williams, M. S., de Maddalena, I. D., Osterwalder, U., & Surber, C. (2017). SPF communication of sunscreen effectiveness: A web-based study of perception of effectiveness by dermatologists. *JAMA Dermatology*, 153, 348–349. doi:10.1001/jamadermatol.2016.4924

Kämmer, J. E., Hautz, W. E., **Herzog**, S. M., Kunina-Habenicht, O., & Kurvers, R. H. J. M. (2017). The potential of collective intelligence in emergency medicine: Pooling medical students' independent decisions improves diagnostic performance. *Medical Decision Making*, 37, 715–724. doi:10.1177/0272989X17696998

Moussaïd, M., **Herzog**, S. M., Kämmer, J. E., & Hertwig, R. (2017). Reach and speed of judgment propagation in the laboratory. *Proceedings of the National Academy of Sciences of the United States of America*, 114(16), 4117–4122. doi:10.1073/pnas.1611998114

Kurvers, R. H. J. M., **Herzog**, S. M., Hertwig, R., Krause, J., Carney, P. A., Bogart, A., et al. (2016). Boosting medical diagnostics by pooling independent judgments. *Proceedings of the National Academy of Sciences of the United States of America*, 113, 8777–8782. doi:10.1073/pnas.1601827113

- Analytis, P. P., Barkoczi, D., & **Herzog**, S. M. (2015). You're special, but it doesn't matter if you're a greenhorn: Social recommender strategies for mere mortals. In R. Dale, C. Jennings, P. Maglio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi. (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society* (pp. 1799–1804). Austin, TX: Cognitive Science Society.
- Frey, R., Hertwig, R., & **Herzog**, S. M. (2014). Surrogate decision making: Do we have to trade off accuracy and procedural satisfaction? *Medical Decision Making*, 34, 258–269. doi:10.1177/0272989X12471729
- Herzog**, S. M., & Hertwig, R. (2014a). Harnessing the wisdom of the inner crowd. *Trends in Cognitive Sciences*, 18, 504–506. doi:10.1016/j.tics.2014.06.009
- Herzog**, S. M., & Hertwig, R. (2014b). Think twice and then: Combining or choosing in dialectical bootstrapping? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40, 218–232. doi:10.1037/a0034054
- von Helversen, B., **Herzog**, S. M., & Rieskamp, J. (2014). Haunted by a Doppelgänger: Irrelevant facial similarity affects rule-based judgments. *Experimental Psychology*, 61, 12–22. doi:10.1027/1618-3169/a000221
- Herzog**, S. M., & Hertwig, R. (2013). The crowd within and the benefits of dialectical bootstrapping: A reply to White and Antonakis (2013). *Psychological Science*, 24, 117–119. doi:10.1177/0956797612457399
- Herzog**, S. M., & Hertwig, R. (2013). The ecological validity of fluency. In C. Unkelbach & R. Greifeneder (Eds.), *The experience of thinking: How feelings from mental processes influences cognition and behavior* (pp. 190–219). London: Psychology Press.
- Herzog**, S. M., & Ostwald, D. (2013). Sometimes Bayesian statistics are better [correspondence]. *Nature*, 494, 35. doi:10.1038/494035b
- Herzog**, S. M., & von Helversen, B. (2013). Blending and choosing within one mind: Should judgments be based on exemplars, rules or both? In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.) *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 2536–2541). Austin, TX: Cognitive Science Society. <http://mindmodeling.org/cogsci2013/papers/0459/paper0459.pdf>
- Schooler, L. J., Hertwig, R., & **Herzog**, S. M. (2012). How smart forgetting helps heuristic inference. In P. M. Todd, Gigerenzer, G. & the ABC Research Group, *Ecological rationality: Intelligence in the world* (pp. 144–166). New York: Oxford University Press.
- Herzog**, S. M., & Hertwig, R. (2011). The wisdom of ignorant crowds: Predicting sport outcomes by mere recognition. *Judgment and Decision Making*, 6, 58–72.
- Erev, I., Ert, E., Roth, A. E., Haruvy, E., **Herzog**, S. M., Hau, R., Hertwig, R., Stewart, T., West, R., Lebiere, C. (2010). A choice prediction competition, for choices from experience and from description. *Journal of Behavioral Decision Making*, 23, 15–47. doi:10.1037/a0013025
- Hertwig, R., & **Herzog**, S. M. (2009). Fast and frugal heuristics: Tools of social rationality. *Social Cognition*, 27, 661–698. doi:10.1521/soco.2009.27.5.661
- Herzog**, S. M., & Hertwig, R. (2009). The wisdom of many in one mind: Improving individual judgments with dialectical bootstrapping. *Psychological Science*, 20, 231–237. doi:10.1111/j.1467-9280.2009.02271.x
- Hertwig, R., **Herzog**, S. M., Schooler, L. J., & Reimer, T. (2008). Fluency heuristic: A model of how the mind exploits a by-product of information retrieval. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 34, 1191–1206. doi:10.1037/a0013025
- Reprinted in: Gigerenzer, G., Hertwig, R., & Pachur, T. (Eds.). (2011). *Heuristics: The foundations of adaptive behavior* (pp. 540–560). New York: Oxford University Press.
- Herzog**, S. M., Hansen, J., & Wänke, M. (2007). Temporal distance and ease of retrieval. *Journal of Experimental Social Psychology*, 43, 483–488. doi:10.1016/j.jesp.2006.05.008

Preprints

Litvinova, A., Kurvers, R., Hertwig, R., & **Herzog**, S. M. (2019, August 14). *When experts make inconsistent decisions*. <https://doi.org/10.31234/osf.io/dtaz3>

Analytis, P. P., Schnabel, T., **Herzog**, S. M., Barkoczi, D., & Joachims, T. (2017, June 27). *A preference elicitation interface for collecting rich recommender datasets*. arXiv:1706.08184

Organized workshops, symposia and conferences

Workshop *"How to make good predictions"* held at Summer Institute on Bounded Rationality 2018: Strategies X Environment, June 19th–27th 2018, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *"Fitting vs. predicting"* held at Summer Institute on Bounded Rationality 2017: Predictions under uncertainty, June 6th–14th 2017, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Prediction contest: How well can you predict what you don't yet know?* held at Summer Institute on Bounded Rationality 2016: Better decisions in a complex world, June 27th–July 5th 2016, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *How well can you predict what you don't yet know?* held at 2016 JDMx Meeting for early career researcher, June 8th–11th 2016, University of Basel, Basel, Switzerland.

Workshop *Prediction contest: How well can you predict what you don't yet know?* held at Summer Institute on Bounded Rationality 2015: Homo Heuristicus in the Economy, June 4th–11th 2015, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Introduction to statistical analyses using R—Tips & tricks*. October 29th & November 12th 2014, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Expertise, popularity, and the wisdom of crowds* (with Mehdi Moussaïd). Summer Institute on Bounded Rationality: Simple solutions for a complex world, June 10th–17th 2014, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Data analysis beyond p-values: A practical introduction to Bayesian statistics*. International Max Planck Research School LIFE, June 3rd 2014, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Psychologists are open to change and should adopt Bayesian statistics* (with Mirjam Jenny). 6th JDM Workshop for Young Researchers, July 17th–19th 2013, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop *Data analysis beyond p-values*. Summer Institute on Bounded Rationality: Decision making in a social world, June 17th–25th 2013, Max-Planck-Institute for Human Development, Berlin, Germany.

Workshop scientific writing (with Bettina von Helversen). 4th Workshop for Judgment and Decision making, Max Planck Institute for Research on Collective Goods, Bonn, Germany (August 2011).

Co-organizer 3rd Workshop for Judgment and Decision making, University of Basel, Switzerland (September 2010).

Co-organizer symposium: Herzog, S. M., & Lee, L. (2009). *Are crowds always wiser?* Symposium at the 30th Annual Meeting of the Society for Judgment and Decision Making, Boston, Massachusetts, USA.

Workshop robust statistics. 2nd Workshop for Judgment and Decision making, University of Mannheim, Germany (July 2009).

Co-organizer symposium: Herzog, S. M., & Hilbig, B. (2009). *Simple prediction strategies: Recognition and "The Wisdom of Crowds"*. Symposium at the 51st Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Jena, Germany.

Workshop robust statistics, with Robin Hau. University of Basel, Basel, Switzerland (September 2008).

Co-organizer European Social Cognition Network Transfer of Knowledge Conference 2005, Vitznau, Switzerland.

Workshop introduction to web technologies: HTML, PHP & MySQL, University of Basel, Basel, Switzerland (2005).

Continuing education

Statistical training

- *Data Science* specialization, Johns Hopkins University on [Coursera](#)
 - *Reproducible Research*. Certificate earned on [August 2nd, 2015](#)
 - *Exploratory Data Analysis*. Certificate earned on [February 2nd, 2015](#)
 - *Getting and Cleaning Data*. Certificate earned on [December 28th, 2014](#)
 - *R Programming*. Certificate earned on [November 4th, 2014](#)
 - *The Data Scientist's Toolbox*. Certificate earned on [November 4th, 2014](#)
- *Machine learning*, Stanford University on [Coursera](#). Certificate earned on [June 4th, 2014](#)
- *Bayesian modeling for cognitive science: A WinBUGS workshop*, 2011, University of Amsterdam, Netherlands.
- *Summer School in Computational and Mathematical Modeling of Cognition*, European Society for Cognitive Psychology, Mallnitz, 2010, Austria.

Presentation skills

- Presenting at international scientific conferences. 3 day course (30h/1 ECTS) by TRESS&TRESS (www.tress-tress.com)

Teaching, supervision, and mentoring

Training in teaching skills for higher education

Certificate in higher education [Sammelzertifikat Hochschuldidaktik] at the University of Basel (20.11.2011; 2010-2011; total of 66 hours):

- *Introduction to higher education didactics* [Einführungsmodul Hochschuldidaktik] (2010)
- *How to grade* [Fair prüfen] (2011)
- *Planing, teaching and evaluating courses* [Lehrveranstaltungen planen, durchführen und evaluieren] (2010)
- *Running meetings and discussions* [Diskussionsleitung in der Lehre] (2010)
- *Problem-based learning* [Problemorientiertes Lernen] (2010)
- *Rhetoric* [Rhetorische Kommunikation] (2010)
- *Rethoric: Explication and narration* [Explikation und Narration] (2011)

Graduate and undergraduate courses taught

Department of Psychology, University of Basel, Switzerland

Improving judgment and decision making (master level theory seminar: 2014)

Psychology of forecasting (master level theory seminar: 2007, 2009, 2010, 2011)

Applied forecasting (master level applied seminar: 2010, 2011, 2012)

Introduction to psychology, economics and neuroscience (master level theory seminar: 2005, 2006, 2007, 2008)

Negotiation (master level applied seminar: 2008)

Drawing inferences from memory (with Lael Schooler; master level theory seminar: 2006)

Decision analysis and decision technology (master level theory seminar: 2006)

Evolutionary psychology: Emotion, motivation and evolution (bachelor level lecture: 2011, 2012)

Managerial decision making (bachelor level seminar: 2007)

How to write a bachelor thesis (bachelor level seminar: 2010, 2011)

Supervision/mentoring

Ph.D. students: Aleksandra Litvinova, Nathaniel Phillips

Master theses: Alice Atanasiu, Basil Blum, Andrea Hajmer, Greta Kellermann, Isa de Maddelena, Zsafia Oroszlan, Yuliya Romanyuk, Ruxandra Teodoreanu

Master course theses: Gerlinde Amschl, Anaïs Arnoux, Raffaella Arcuri-Tortola, Carola Binder, Lorena Boss, Monica Caprio, Florence Ettlin, Dominic Fischer, Chantal Grüter, Kirsten Hardt, Christina Jans, Sarah Kupper, Andrea Rid, Yuliya Romanyuk, Sabrina Stefanelli, Elena Stolz, Milena Ulrich, Stephanie Zell

Bachelor theses: Béla Ackermann, David Allemann, Alice-Alexandra Atanasiu, Cécile Bucher, Emina Canic, Kim Casagrande, Romain Cottens, Loris Criscione, Sibylle Fluri, Marietta Jäggi, Carmen Kaiser, Miriam Kaufmann, Lea Kilchling, Nadia Kohler, Selina Langenegger, Claudia Lombris, Samir Meier, Yuliya Romanyuk, Oliver Schürmann, Alice Seiler, Ariane Senn, Tom Siebenaler, Petra Vonmoos, Sylvia Walukiewicz

Internships: Stephan Bedenk, Eleanor Brewer, Michael Geers, Alexander zur Bonsen

Professional services

Reviewing papers

Behavior Research Methods
Cognitive Psychology
Computational Brain & Behavior
Decision
Decision Analysis
European Journal of Social Psychology
Experimental Psychology
IEEE Transactions on Human-Machine Systems
Journal of Applied Research in Memory and Cognition
Journal of Behavioral Decision Making
Journal of Experimental Psychology: General
Journal of Experimental Psychology: Human Perception & Performance
Journal of Experimental Psychology: Learning, Memory, and Cognition
Journal of Mathematical Psychology
Journal of Personality and Social Psychology
Judgment and Decision Making
Management Science
Medical Decision Making
Memory & Cognition
Minds and Machines
Nature Human Behavior
Organizational Behavior and Human Decision Processes
Personality and Social Psychology Review
PLOS ONE
Psychological Science
Psychonomic Bulletin & Review
Social Cognition
Synthese
Topics in Cognitive Science

Reviewing grant applications

German Science Foundation (Deutsche Forschungsgemeinschaft, DFG)
German-Israeli Foundation for Scientific Research and Development (GIF)
ETH Zürich Research Commission
Israel Science Foundation (ISF)
National Science Foundation (NSF)
United States-Israel Binational Science Foundation (BSF)

Reviewing conference submissions

COGSCI annual meeting of the Cognitive Science Society

SJDM annual conference (Society for Judgment and Decision Making)

Diagnostic Error in Medicine conference (Society to Improve Diagnosis in Medicine)

SPUDM conference (subjective probability, utility, and decision making conference; European Association for Decision Making, EADM)

Consulting and training activities

Berlin University Alliance

International Society for Human Rights (Switzerland) & Swisstransplant

Robert Koch-Institute (Berlin)

swiss re

VolkswagenStiftung

Committee member

Graduate student and post-doc representative, Department of Psychology, University of Basel, Switzerland, 2007–2012

Student representative, Department of Psychology, University of Basel, Switzerland, 2000–2003.

Professional member

Society for Judgment and Decision Making (SJDM)

European Association for Decision Making (EADM)

Fellow of the Psychonomic Society (FPsyS)

Conference talks and posters

only talks and posters as presenter are listed

Kurvers, R., Herzog, S. M., Hertwig, R., Krause, J., Moussaid, M., Argenziano, G., ... Wolf, M. (2019). How to detect high-performing individuals and groups: Decision similarity predicts accuracy. Paper presented at the 14th Annual Tinbergen Institute Conference ("Bayesian Crowd"), Erasmus University Rotterdam, Rotterdam, Netherlands.

Herzog, S. M., Analytis, P. P., & Barkoczi, D. (2018). *Social learning strategies for matters of taste*. Paper presented at the Collective Intelligence 2018 Conference of the Association for Computing Machinery (ACM), Zürich, Switzerland.

Herzog, S. M. (2018). *The wisdom of the inner crowd*. Invited talk, presented at the Collective Opinion and Belief Aggregation workshop at the Ecole Normale Supérieure, Paris, France.

Herzog, S. M., Analytis, P. P., & Barkoczi, D. (2018). *Social learning strategies for matters of taste*. Paper presented at the Psychonomics International Conference 2018 of the Psychonomic Society, Amsterdam, Netherlands.

Herzog, S. M. (2017). *Boosting: Behavioral insights beyond nudging*. Invited talk, presented at the Behavioural Insights Summer School, University of Erfurt, Erfurt, Germany.

Moussaïd, M., Herzog, S. M., Kämmer, J. E., & Hertwig, R. (2017). *Reach and speed of judgment propagation in the laboratory*. Paper presented at the 26th Subjective Probability, Utility, and Decision Making (SPUDM) Conference, Haifa, Israel.

Herzog, S. M. (2017). *Misses vs. false alarms in high-stakes decisions: Quantifying benefits–harms ratios for policy analysis*. Invited talk, presented at the Research Colloquium on Psychology of Decision Making, University of Konstanz, Konstanz, Germany.

Herzog, S. M., Huber, R., Horn, S., Klucharev, V., & Rieskamp, J. (2016). *Why does social influence increase with group size? A sequential-sampling model analysis of rapid perceptual decisions*. Poster presented at the 57th Annual Meeting of the Psychonomic Society, Boston, Massachusetts, USA.

- Moussaïd, M., Herzog, S. M., Kämmer, J. E., & Hertwig, R. (2016). *How far can opinions travel in social networks? The spatio-temporal dynamics of judgment propagation in the laboratory*. Poster presented at the 37th Annual Meeting of the Society for Judgment and Decision Making, Boston, Massachusetts, USA.
- Herzog, S. M., & Luan, S. (2016). *Around nine: The wisdom of small crowds*. Invited talk, presented at the Exeter Prize 2016 Workshop "Information aggregation and the wisdom of the crowds", University of Exeter, Exeter, UK.
- Herzog, S. M. (2016). *Misses vs. false alarms in high-stakes decisions: Quantifying benefits-harms ratios for policy analysis in medical decision making*. Talk presented at the 50th Kongress der deutschen Gesellschaft für Psychologie (DGPs) [50th Congress of the German Psychological Society], University of Leipzig, Leipzig, Germany.
- Moussaïd, M., Herzog, S. M., Kämmer, J. E., & Hertwig, R. (2016). *How far can opinions travel in social networks? The spatio-temporal dynamics of judgment propagation in the laboratory*. Invited talk, presented at the research colloquium at the Max Planck Institute for Research on Collective Goods, Bonn, Germany.
- Herzog, S. M. (2016). *Misses vs. false alarms in high-stakes decisions: Quantifying benefits-harms ratios for policy analysis in medical decision making*. Poster presented at the 16th Biennial Society for Medical Decision Making-European Conference, London, UK.
- Herzog, S. M. (2015). *Why and when often-heard things tend to be true: An ecological analysis of the truth effect*. Poster presented at the 56th Annual Meeting of the Psychonomic Society, Chicago, Illinois, USA.
- Herzog, S. M. (2015). *Misses vs. false alarms in probabilistic forecasts: Quantifying error tradeoffs in high-stakes judgments*. Poster presented at the 36th Annual Meeting of the Society for Judgment and Decision Making, Chicago, Illinois, USA.
- Herzog, S. M. (2015). *Signal detection in the wild: How to quantify the error tradeoffs of decision makers who are unable or reluctant to reveal them*. Paper presented at the 25th Subjective Probability, Utility, and Decision Making (SPUDM) Conference, Budapest, Hungary.
- Herzog, S. M. (2014). *Signal detection theory in the wild: Reverse-engineering error preferences of decision makers who are unable or reluctant to reveal them*. Paper presented at the 35th Annual Meeting of the Society for Judgment and Decision Making, Long Beach, California, USA.
- Herzog, S. M. (2014). *Signal detection theory in the wild: Reverse-engineering error preferences in naturalistic settings*. Poster presented at the 55th Annual Meeting of the Psychonomic Society, Long Beach, California, USA.
- Herzog, S. M. (2014). *Signal detection in the wild: How to quantify implied cost-benefit tradeoffs of decision makers who are unable or reluctant to reveal them*. Invited talk, presented at the research colloquium at the Department of Psychology, University of Tübingen, Tübingen, Germany.
- Herzog, S. M. (2014). *Harnessing the wisdom of the inner crowd*. Invited talk, presented at the Management Seminar series at the Department of Economics and Business, Universitat Pompeu Fabra, Barcelona, Spain.
- Jenny, M. A., & Herzog, S. M. (2014). *How changing research practices and using Bayesian statistics benefits the behavioral sciences*. Joint keynote delivered at the 9th Workshop on Clinical Decision Making and Diagnostic Reasoning, Lüneburg, Germany.
- Herzog, S. M., Unkelbach, C., & Hertwig, R. (2013). *Why often-heard things tend to be true: The ecological rationality of the truth effect*. Paper presented at the 24th Subjective Probability, Utility, and Decision Making (SPUDM) Conference, Barcelona, Spain.
- Herzog, S. M. (2013). *Reverse-engineering decision makers' priorities using signal detection theory and cultural consensus theory*. Paper presented at the 46th Annual Meeting of the Society of Mathematical Psychology (SMP), Potsdam, Germany.
- Herzog, S. M., & von Helversen, B. (2013). *Blending and choosing within one mind: Should judgments be based on exemplars, rules or both?* Poster presented at the 35th annual conference of the Cognitive Science Society, Berlin, Germany.
- Herzog, S. M., de Maddalena, I. D., & Osterwalder, U. (2013). *Communicating sunscreen effectiveness as "percentage of sunrays blocked" leads laypeople to underestimate the increase in protection when comparing sunscreens*. Paper presented at the Research In Medical Education 2013 conference (RIME 2013), Berlin, Germany.

- Herzog, S. M. (2013). *The wisdom of crowds within a single mind*. Invited talk, paper presented at the Wisdom of the Crowd Conference of the Institute for Mathematical Behavioral Sciences, University of California, Irvine, USA.
- Herzog, S. M., Unkelbach, C., & Hertwig, R. (2013). *Why often-heard things tend to be true: The ecological rationality of the truth effect*. Paper presented at the 55th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Vienna, Austria.
- Herzog, S. M. (2012). *How to make people underestimate Fukushima: Mismatched rates bias the perception of risk and natural rates eliminate this bias*. Poster presented at the 33rd Annual Meeting of the Society for Judgment and Decision Making, Minneapolis, Minnesota, USA.
- Herzog, S. M., Unkelbach, C., & Hertwig, R. (2012). *Why often-heard things tend to be true: The ecological rationality of the truth effect*. Paper presented at the 5th Workshop for Judgment and Decision making, University of Basel, Switzerland.
- Herzog, S. M., Unkelbach, C., & Hertwig, R. (2012). *Why often-heard things tend to be true: The ecological rationality of the truth effect*. Poster presented at the Workshop on Testing Theories of Choice Behavior, Max Planck Institute for Human Development, Berlin, Germany.
- Herzog, S. M., & Hertwig, R. (2012). *Averaging analytical and intuitive judgment with dialectical bootstrapping: The wisdom of an intuitive-analytical crowd within one mind*. Paper presented at the 54th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Mannheim, Germany.
- Herzog, S. M., & Hertwig, R. (2011). *Averaging analytical and intuitive judgment with dialectical bootstrapping: The wisdom of an intuitive-analytical crowd within one mind*. Paper presented at the 32nd Annual Meeting of the Society for Judgment and Decision Making, Seattle, Washington, USA.
- Herzog, S. M. (2011). The wisdom of crowds within one mind: The benefits of blending opinions and cognitive processes. Invited talk, paper presented at the 2011 International Small-Group Meeting, „What is adaptive cognition and behavior?“, Heidelberg, Germany.
- Herzog, S. M., Türp, J., Romanyuk, Y., & Hertwig, R. (2011). *Modeling biases in medical decision making with Bayesian hierarchical signal detection models*. Poster presented at the 2011 workshop „Bayesian modeling for cognitive science: A WinBUGS workshop“, University of Amsterdam, Netherlands.
- Herzog, S. M., Phillips, N. D., & Hertwig, R. (2011). *How to improve Bayesian inferences by contradicting oneself: Dialectical bootstrapping*. Paper presented at the 4th Workshop for Judgment and Decision making, Max Planck Institute for Research on Collective Goods, Bonn, Germany.
- Herzog, S. M., & von Helversen, B. (2011). *The benefits of blending cognitive processes within one mind*. Paper presented at the 10th Annual Summer Interdisciplinary Conference (ASIC), Caldes de Boi, Pyrenees, Spain.
- Herzog, S. M. (2011). *The "wisdom of crowds" in one mind: Dialectical bootstrapping and the benefits of blending different cognitive processes*. Invited talk, Social and Economic Psychology Colloquium, University of Basel, Basel, Switzerland.
- Herzog, S. M., & von Helversen, B. (2011). *The benefits of blending cognitive processes within one mind*. Paper presented at the 53rd Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Halle, Germany.
- Herzog, S.M. (2010). *Dialectical bootstrapping: The "wisdom of crowds" within one mind*. Invited talk for Hillel Einhorn New Investigator Award 2010, 31st Annual Meeting of the Society for Judgment and Decision Making, St. Louis, Missouri, USA.
- Herzog, S. M., & Hertwig, R. (2010). *The wisdom of many in one mind: When does dialectical bootstrapping improve judgment and do people use it?* Poster presented at the 31st Annual Meeting of the Society for Judgment and Decision Making, St. Louis, Missouri, USA.
- Herzog, S. M. (2010). *The "wisdom of crowds" in one mind: Dialectical bootstrapping and the benefits of combining different cognitive processes*. Invited talk, Colloquium Behavioral Studies (851-0585-01L), ETH Zürich, Zürich, Switzerland.
- Herzog, S. M., & von Helversen, B. (2010). *The benefits of combining cognitive processes within a single mind*. Paper presented at the 3rd Workshop for Judgment and Decision making, University of Basel, Switzerland.

- Herzog, S. M., & Hertwig, R. (2010). *Dialectical bootstrapping: How do people resolve estimation conflict within their own mind?* Poster presented at the 2010 Summer School in Computational and Mathematical Modeling of Cognition (European Society for Cognitive Psychology), Mallnitz, Austria.
- Herzog, S. M., & Hertwig, R. (2010). *Dialectical bootstrapping: Should you trust your „crowd within“ or chase the „expert in your head“?* Paper presented at the 52nd Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Saarbrücken, Germany.
- Herzog, S. M., & von Helversen, B. (2009). *Modelling dialectical bootstrapping: Combining linear and exemplar models within one mind.* Paper presented at the Applied Cognitive Science and Economics workshop, Faculté des Hautes Etudes Commerciales (HEC), University of Lausanne, Switzerland.
- Herzog, S. M., & Hertwig, R. (2009). *Dialectical bootstrapping: When should you trust your “crowd within”?* Paper presented at the 30th Annual Meeting of the Society for Judgment and Decision Making, Boston, Massachusetts, USA.
- Herzog, S. M., & Hertwig, R. (2009). *Dialectical bootstrapping: The wisdom of crowds in one mind.* Paper presented at the 22nd Subjective Probability, Utility, and Decision Making (SPUDM) Conference, Rovereto, Italy.
- Herzog, S. M., & Hertwig, R. (2009). *Dialectical bootstrapping: How and why contradicting yourself can improve your judgment.* Paper presented at the 2nd Workshop for Judgment and Decision making, University of Mannheim, Germany.
- Herzog, S. M., & Hertwig, R. (2009). *The wisdom of many within one mind: Making better judgments with dialectical bootstrapping.* Paper presented at the 51st Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Jena, Germany.
- Erev, I., Haruvy, E., Herzog, S. M., & Stewart, T. (2009). *The Technion Prediction Tournament: Round table discussion with the winners.* 2009 Asia Pacific meeting of the Economic Science Association (APESA09), Haifa, Israel.
- Herzog, S. M., & Hertwig, R. (2009). *The wisdom of many within one mind: Making better judgments with dialectical bootstrapping.* Paper presented at the 2009 Asia Pacific meeting of the Economic Science Association (APESA09), Haifa, Israel.
- Herzog, S. M., & Hertwig, R. (2008). *The wisdom of many within one mind: Making better judgments with dialectical bootstrapping.* Paper presented at the 29th Annual Meeting of the Society for Judgment and Decision Making, Chicago, Illinois, USA.
- Herzog, S. M., & Hertwig, R. (2008). *The wisdom of ignorant crowds: Collective recognition and forecast combination.* Paper presented at the 29th International Congress of Psychology, Berlin, Germany.
- Herzog, S. M., Hertwig, R., & Schooler, L. J. (2008). *Do differences in fluency make us smart? The ecological rationality of retrieval fluency?* Poster presented at the Mannheim Conference on Formal Models of Memory, Judgment, and Decision Making, University of Mannheim, Germany.
- Herzog, S. M. (2008). *Do differences in fluency make us smart? The ecological rationality of retrieval fluency.* Invited talk, Sonderforschungsbereich 504 Seminars, University of Mannheim, Germany.
- Herzog, S. M. (2008). *“The wisdom of the crowd” innerhalb von einzelnen Personen: Wie man mit Widersprüchen gute Vorhersagen machen kann. [“The wisdom of the crowd” within individuals: How to make good forecasts by contradicting yourself].* Paper presented at the 50th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Marburg, Germany.
- Herzog, S. M., Hertwig, R., & Schooler, L. J. (2007). *The psychology of the fluency heuristic: Do differences in fluency make us smart?* Poster presented at the 28th Annual Meeting of the Society for Judgment and Decision Making, Long Beach, California, USA.
- Herzog, S. M., Hertwig, R., & Schooler, L. J. (2007). *Fluency heuristic: A model of how the mind exploits a by-product of information retrieval.* Paper presented at the 10th Congress of the Swiss Society of Psychology, Zürich, Switzerland.
- Herzog, S. M., & Hertwig, R. (2007). *The wisdom of ignorant crowds: Forecasting with collective recognition.* Poster presented at the 21st Subjective Probability, Utility, and Decision Making (SPUDM) Conference, Warsaw, Poland.

Herzog, S. M., & Hertwig, R. (2007). *Wenn Ignoranz bessere Vorhersagen als die FIFA macht: Kollektive Rekognition und die Vorhersage der WM 2006.* [When ignorance makes better predictions than the FIFA: Collective recognition and forecasting the Soccer World Cup 2006.] Paper presented at the 49th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Trier, Germany.

Herzog, S. M., & Hertwig, R. (2007). *The wisdom of ignorant crowds: Forecasting with collective recognition.* Paper presented at the 8th Fachtagung der Gesellschaft für Kognitionswissenschaft (KogWis 2007), Saarbrücken, Germany.

Herzog, S. M., & Hertwig, R. (2006). *The collective wisdom of partially ignorant people: How successful is collective recognition in predicting the FIFA Soccer World Cup 2006?* Poster presented at the 27th Annual Meeting of the Society for Judgment and Decision Making, Houston, Texas, USA.

Herzog, S. M. (2006). *Fluency heuristic: A model of how the mind exploits a by-product of information retrieval.* Poster presented at the Summer Institute on Bounded Rationality in Psychology and Economics, Berlin, Germany. The poster won the 2nd place in the summer institute's poster awards. Chairs: Gerd Gigerenzer (Center for Adaptive Behavior and Cognition, Max Planck Institute for Human Development, Berlin, Germany) and Werner Güth (Strategic Interaction Group, Max Planck Institute of Economics, Jena, Germany).

Herzog, S. M., Hertwig, R., & Schooler, L. J. (2006). *The boundedly rational fluency heuristic: Fast and frugal decisions by the use of recognition speed.* Paper presented at the Congress of the International Association for Research in Economic Psychology and the Society for the Advancement of Behavioral Economics, Paris, France.

Herzog, S. M., Hertwig, R., & Schooler, L. J. (2006). *The boundedly rational fluency heuristic: Recognition speed as an ecological cue in uncertain environments.* Paper presented at the Small-group Meeting on Adaptive Cognition in an Uncertain Environment. Chairs: Klaus Fiedler, Yaakov Kareev, & Peter Freytag, International Science Forum (ISF) of the University of Heidelberg, Heidelberg, Germany.

Herzog, S. M., Hertwig, R., & Schooler, L. J. (2006). *Die begrenzt rationale fluency heuristic: Wann wird die Rekognitionszeit für Inferenzen genutzt?* [The boundedly rational fluency heuristic: When is recognition speed used for making inferences?] Paper presented at the 48th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Mainz, Germany.

Herzog, S. M., Hansen, J., & Wänke, M. (2005). *Temporal construal and ease of retrieval.* Paper presented at the European Social Cognition Network Transfer of Knowledge Conference 2005, Vitznau, Switzerland.

Herzog, S. M., Hansen, J., & Wänke, M. (2005). *Temporal construal and ease of retrieval.* Paper presented at the 14th General Meeting of the European Association of Experimental Social Psychology, Würzburg, Germany.

Herzog, S. M., Hertwig, R., & Schooler, L. J. (2005). *Die begrenzt rationale fluency heuristic: Wie ökologisch valide sind subjektive Latenzzeiten?* [The boundedly rational fluency heuristic: How ecologically valid is recognition speed?] Paper presented at the 47th Tagung experimentell arbeitender Psychologen [Conference of Experimental Psychologists], Regensburg, Germany.