

Dr. Helen Fischer

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Research: Cognitive psychology of contested science (climate change, vaccination, nanotechnology); metacognition and motivated reasoning; science communication; science-related misinformation and climate denial

Education and Employment

Starting 04/2022

Substitute professorship (50%) at Chair for General Experimental Psychology,
University of Mainz

Starting 04/2022

Postdoctoral researcher at Leibniz Institut für Wissensmedien, Tübingen

06/2020-04/2022

Visiting researcher at the Max Planck Institute for Human Development, Center for Adaptive Rationality, Berlin, Germany. Funded through a Fellowship from the German Research Foundation (DFG). Research focus: Role of metacognition (insight into the validity and fallibility of own knowledge) for belief-updating about contested science in digital information environments.

04/2019-05/2020

Postdoctoral researcher at The Stockholm Resilience Centre, Stockholm, Sweden, Complex Adaptive System group. Funded through a Fellowship from the German Research Foundation (DFG). Interdisciplinary project on the role of knowledge for group decisions about common-pool resources.

04/2016-03/2019

Postdoctoral research associate at the chair for General Psychology, University of Heidelberg.

04/2016-02/2018

Postdoctoral researcher at the Heidelberg Institute of Public Health, Climate Change and Health group. Interdisciplinary project (political science, geography, psychology, sociology) on climate change beliefs across Europe.

11/2014-03/2016

Research Associate in the interdisciplinary project (Economics and Psychology) *Self-regulation of common property resources: Cognitive prerequisites for system sustainability*

01/2016

PhD in Psychology received from Heidelberg University. Thesis on the cognitive mechanisms of understanding complex systems, and predicting non-linear processes. Particular focus on the example of climate change. Title of dissertation: *Understanding Dynamic Systems and Non-Linearity*.

09/2013-10/2014

Research Associate Cognitive Psychology, Heidelberg University.

01/2011-08/2013

Research Associate at Heidelberg University in the interdisciplinary (Economics and Cognitive Psychology) BMBF-project CLIMAGE: *climate change in aging societies*. Focus on understanding of complex systems and non-linear developments

2010

Diploma in Psychology, University of Heidelberg (Grade: 1.0)

Invited talks

Fischer, H. (upcoming 2022, Sep). *Political polarization and climate science: No evidence for science literacy driving motivated reasoning in a US national study*. Invitation for the Symposium “Effective science communication based on psychological insights – quo vadis?” at the DGPS Congress Hildesheim, 2022.

Fischer, H. (upcoming 2022, June). Cognitive pitfalls in communicating climate science to policy-makers and the public. Talk invited for the symposium “climate change and pandemics-double burden for health systems”, Institute for Global Health, Heidelberg University (HIGH).

Fischer, H. (upcoming 2022, Sep). Invitation for the 12. Extremwetterkongress, Hamburg. (Title to be announced).

Fischer, H. (2021). *Klimakommunikation: Methoden aus dem Max Planck Institut für Bildungsforschung*. Talk invited for the “14. DWD Klimatagung” at the Deutscher Wetterdienst, Offenbach (DWD; German Meteorological Service). Thema der Tagung: “Klimakommunikation”.

Fischer, H. (2021). *Klimawandelwissen in postfaktischen Zeiten*. Extremwetterkongress, Hamburg.

- Fischer, H.** (2021). *Understanding the Cognitive Mechanisms Underlying Societal Polarization*. Talk invited for the Interdisciplinary symposium: “Belief Polarization in Times of Coronavirus and Climate Change – Putting Theory into Practice” at the Leibniz Institut für Wissensmedien, Tübingen.
- Fischer, H.** (2021). *Metacognitive perspectives on political polarization*. Talk held at the symposium “Neurocognitive Perspectives on Political Polarization” at the Conference of the European Society for Cognitive and Affective Neuroscience (organized by Leor Zmigrod, Cambridge University).
- Fischer, H.** (2019). *Human health as a motivator for climate change mitigation: results from four European high-income countries*. Talk invited for the Malta Legal Forum 2019, Singapore.
- Fischer, H.** (2018). *Understanding scientific information on climate change health impacts*. Talk held at Malta Legal Forum 2018, Bruges, Belgium.
- Fischer, H.** (2017). *How understandable are graphs in the IPCC reports? Evidence from the COP22 in Marrakesh*. Talk held at the Heidelberg Center for the Environment.
- COP22 Delegation of Heidelberg University** (2016). *COP of action? The UN Climate Change Conference in Marrakesh*. Talk held at the Heidelberg Center for the Environment.
- Fischer, H.** (2015). *Lost in Translation: the particular challenges in communicating future risks in climate change*. Talk held at the Institute of Epidemiology, University Hospital, Heidelberg, Germany.
- Fischer, H.** (2015). *Understanding Dynamic Systems and Non-Linearity*. Talk held at the colloquium social psychology, Institute of Psychology, Heidelberg, Germany.
- Fischer, H.** & Gonzalez, C. (2015). Our understanding of dynamic systems depends on the way we “see” them. Talk held at the demadyn 15 in Heidelberg, Germany.

Fellowships and Awards

2018-2021

Fellowship, received from Deutsche Forschungsgemeinschaft (DFG).

2019

Admission and travel stipend, Summer Institute Bounded Rationality in the Digital World, Max Planck Institute for Human Development (MPIB), Berlin

2018

- Travel stipend, University of Missouri and National Science Foundation (\$950) for International Workshop and Symposium on Probabilistic Specification and Quantitative Testing of Decision Theories
- 2018
- Travel stipend, Risk and Uncertainty Conference, University of Amsterdam, Heidelberg Centre for the Environment (HCE)
- 2018
- Fellowship, *Zukunftskolleg* at Heidelberg Centre for the Environment
- 2016
- Stipend to conduct research at 22nd United Nations Framework Convention on Climate Change (COP22) in Marrakesh, Heidelberg Centre for the Environment (HCE)

Appointment procedures—Listenplätze in Berufungsverfahren

2021

W2 Professur „Politische Psychologie“ der Technischen Universität München:
Listenplatz 3 (Verfahren eingestellt).

Publications (peer-reviewed publications: N=22, h-Index: 11)

* shared first-authorship

- Fischer, H.** Huff, M. & Said, N. (in press). Polarized climate change beliefs: No evidence for science literacy driving motivated reasoning in a US national study. *American Psychologist*.
- van den Broek, K.L., Klein, S.A., Luomba, J. & **Fischer, H.** (2021). Introducing M-Tool: A standardised and inclusive mental model mapping tool. *System dynamics review*.
- *Said, N., ***Fischer, H.** & Anders, G. (2021). Contested Science: Individuals with higher metacognitive insight into interpretation of evidence are less likely to polarize. * **shared first-authorship**. *Psychonomic Bulletin and Review*.
- Said, N., & **Fischer, H.** (2021). Extrapolation accuracy underestimates rule learning: Evidence from the function-learning paradigm. *Acta Psychologica*.
- Fischer, H.** & Said, N. (2021) Importance of domain-specific metacognition for explaining beliefs about politicized science: The case of climate change. *Cognition*.
- Fischer, H.**, van den Broek, K. L., Ramisch, K., & Okan, Y. (2020). When IPCC graphs can foster or bias understanding: Evidence among decision-makers from governmental and non-governmental institutions. *Environmental Research Letters*.
- Fischer, H.**, Amelung, A. & Said, N (2019). The accuracy of German citizens' confidence in their climate change knowledge. *Nature Climate Change*.

- *Amelung, D., *Fischer, H., Herrmann, A., Aal, C., Louis, V., Bacher, H., Wilkinson, P. & Sauerborn, R. (2019). Human health as a motivator for climate change mitigation: results from four European high-income countries. *Global Environmental Change*.
- Dubois, G., Sovacool, B., Aall, C., Nilsson, M., Barbier, C., Herrmann, A., ... Fischer, H.,...& Sauerborn, R. (2019). It starts at home? Climate policies targeting household consumption and behavioral decisions are key to low-carbon futures. *Energy Research & Social Science*, 52, 144-158.
- Bothner, F., Dorner, F., Herrmann, A., Fischer, H., & Sauerborn, R. (2019). Explaining climate policies' popularity—an empirical study in four European countries. *Environmental Science & Policy*, 92, 34-45.
- Watts, N., Amann, M., Arnell, N.,... Fischer, H., ... & Costello, A. (2018). The 2018 Report of the Lancet Countdown on Health and Climate Change. *The Lancet*.
- Fischer, H., Schütte, S., Depoux, A., Amelung, D. & Sauerborn, R. (2018). How well do COP22 attendees understand graphs on climate change health impacts from the fifth IPCC assessment report? *International Journal of Environmental Research and Public Health*.
- Herrmann, A., Fischer, H., Amelung, D., Litvine, D., Aall, C., Andersson, C., Baltruszewicz, M, Barbier, C., Bruyère, S., Bénévise, F., Dubois, G., Louis, V., Nilsson, M., Richardsen Moberg, K., Sköld, B. & Sauerborn, R. (2017). Household preferences for reducing greenhouse gas emissions in four European high-income countries: Does health information matter? A mixed-methods study protocol. *BMC Public Health*, 18(1), 71.
- Fischer, H. & Holt, D.V. (2016). When high working memory is and is not beneficial for predicting non-linear processes. *Memory & Cognition*.
- Amelung, D., Fischer, H., Kruse, L. & Sauerborn, R. (2016). Defogging climate change communication: How cognitive research can promote more effective climate communication. *Frontiers in Psychology*.
- Herlihly, N., Bar-Hen, A., Verner, G., Fischer, H., Sauerborn, R., Depoux, A., Flahault, A. & Schütte, S. (2016). Climate Change and Human Health: Where Are The Research Trends? A Scoping Review Protocol. *BMJ Open*.
- Hundertmark, J., Fischer, A., Holt, D., Said, N. & Fischer, H. (2016). System structure and cognitive ability as predictors of performance in dynamic system control tasks. *Journal of Dynamic Decision Making*, 1(1).
- Fischer, H. & Gonzalez, C. (2015). Making sense of dynamic systems: How our understanding of stocks and flows depends on a global perspective. *Cognitive Science*.
- Fischer, H., Degen, C. & Funke, J (2015). Improving stock-flow reasoning with verbal formats. *Simulation & Gaming*.
- Fischer, H., Kapmeier, F., Tabacaru, M., Kopainsky, B. (2015). *The more you see the less you "get": On the importance of a higher-level perspective for understanding dynamic systems*. Proceedings of the 33rd International Conference of the System Dynamics Society.

Tabacaru, M., **Fischer**, H. & Said, N (2014). *Do People Possess a Global and Ordinal Understanding of Accumulation? An Experimental Study*. Proceedings of the 32nd International Conference of the System Dynamics Society (p. 81). Oxford, UK: Wiley-Blackwell

Fischer, H. & Degen, C. (2012). *Stock-flow failure can be explained by the task format*. In E. Huseman & D. Lane (Ed.), **Plenary talk**. Proceedings of the 30th International Conference of the System Dynamics Society (p. 42). Oxford, UK: Wiley-Blackwell.

Invited handbook contributions and essays

Fischer, H. & van den Brook, K. (2022). Climate change knowledge, meta-knowledge, and beliefs. *Research Handbook on Environmental Sociology*.

Herrmann, A., Amelung, D., **Fischer**, H., & Sauerborn, R. (2020). Communicating the health co-benefits of climate change mitigation to households and policy makers. *Research Handbook on Communicating Climate Change*, 279.

Fischer, H., Amelung, D. & Said, N (2020). Confidence in climate change knowledge. Magazine of the European Association of Environmental and Resource Economists.

<https://www.eaere.org/magazine/#1594731842739-ba8672d8-6e1d>

Third-party funding

Submitted 03/21: Emmy Noether junior research group submitted to the Deutsche Forschungsgemeinschaft (DFG). Expected decision date: 01/2022

Deutsche Forschungsgemeinschaft (DFG), 2018: Postdoctoral fellowship, approx. 76.000 Euro

HCE (2018): Influence of Confirmation Bias and Openness on the Emergence of Echo Chambers and Belief Polarization in the Context of Climate Change

ZUK 5.4 Scientific Computing (2018): Influence of Objective and Subjective Understanding of Functional Relationships on Making Predictions and Decisions in the Domain of Climate Change

ZUK 5.4 Scientific Computing (2018): Influence of Objective and Subjective Understanding of Functional Relationships on Making Predictions and Decisions in the Domain of Climate Change

FRONTIER (2017) (Exzellenzinitiative Heidelberg: "Realizing the Potential of a Comprehensive University"): An Agent-based Modeling Approach to Information Spread in Filter Bubbles

Field of Focus 4 (2016): Self-regulation of common property resources: Using Agent-Based Modeling for Exploration of the Influence of Working Memory Capacity in CPR Dilemmas

ZUK 5.4 Scientific Computing (2016): Situational and personal factors that contribute to a better understanding of climate change

Field of Focus 4 (2016): Self-regulation of common property resources: Working memory capacity – Can there be too much of a good thing?

Field of Focus 4 (2014): Self-regulation of common property resources: Cognitive prerequisites for system sustainability.

Science Communication

Member of **Researchers Desk, Stockholm**. Talks, dialogues, and podcasts on the psychology of climate change communication, including digital misinformation spread over social media at schools to 15-18 year old students.

Conference contributions (selection)

- Fischer, H.** (2021). *Metacognition and politicized science: The case of climate change*. **Talk** held at the Annual Meeting of the International Society of Political Psychology.
- Said, N., Fieberg, D., **Fischer H.**, Potschka, A., & Kirches C. (2019). Understanding Belief Polarization - An Agent-Based Modeling Approach. **Talk** at the *European Mathematical Psychology Group (EMPG2019)*, Heidelberg University.
- Said, N., Fieberg, D., **Fischer H.**, Potschka, A., & Kirches C. (2018). An agent-based modeling approach to information spread in filter bubbles. **Talk** at the *European Mathematical Psychology Group(EMPG2018)*, University of Genova.
- Fischer, H.** (2018). Science meets policy-makers: Assessing the comprehension of IPCC graphs on climate related health risks. **Talk** held at the Risk and Uncertainty Conference, Amsterdam.
- Said, N., Fieberg, D., **Fischer H.**, Potschka, A., & Kirches C. (2018). An agent-based modeling approach to information spread in filter bubbles. **Talk** at the *European Mathematical Psychology Group (EMPG2018)*, University of Genova.
- Said, N., Fieberg, D., **Fischer H.**, Lohse, J., & Kirches C. (2018). How does Working Memory Capacity influence Extraction Behavior in CPR Dilemmas? - An Agent-Based Modeling Approach. **Talk** at the *Tagung experimentell arbeitender Psychologen(TeaP2018)*, Marburg University.
- Fischer, H.**, Amelung D., & Said, N. (2017). The confidence-accuracy relationship in CC knowledge and understanding. Poster at *2017 SJDM Conference*, Vancouver, Canada.
- Said, N., **Fischer, H.**, Amelung D., & Kirches C. (2017). Using Agent-Based Modeling for Exploration of the Influence of Working Memory Capacity in CPR Dilemmas. Poster presented at *MathPsych/ICCM 2017*, University of Warwick.
- Fischer, H.**, Amelung, D., & Said, N. (2017). Climate Change and the problem with overconfidence: The difference between perceived and actual understanding. **Talk** at *Cambridge Risk and Uncertainty Conference (RUC)*, University of Cambridge.
- Fischer, H.** & Gonzalez, C. (2015, March). Our understanding of dynamic systems depends on the way we "see" them. **Talk** at at the demadyn 15 in Heidelberg, Germany.
- Hundertmark, J., Fischer, A., Holt, D., Said, N. & **Fischer, H.** (2015, March). Predictors of control performance in simple dynamic tasks under variation of task salience. **Talk** at the demadyn 15 in Heidelberg, Germany.
- Fischer, H.** & Gonzalez, C. (2013, August). *Seeing the forest for the tress predicts accumulation decisions*. Poster presented at the 35th Annual Meeting of the Cognitive Science, Society, Berlin, Germany.

Fischer, H. & Gonzalez, C. (2013, May). *Global-local processing predicts decision-making in stock-flow systems.* Poster at the 25th Annual Convention of the Association for Psychological Science, Washington, D.C.

Teaching

- Psychology of climate change: Understanding, decision-making, and problem-solving
- Complex decisions in the context of the environment and climate change
- Seminar General Psychology
- Seminar science-oriented specialization in cognitive psychology (“Forschungsorientierte Vertiefung”)
- Causality and Climate Change
- Introduction to empirical research methods
- Causality in the climate as a complex system—How do humans acquire causal understanding?

Overview of teaching evaluations

Date	Type of course	Title	Evaluation
SoSe 2018	Forschungsorientierte Vertiefung Allgemeine Psychologie	Psychologie und Klimawandel: Verstehen, Entscheiden, Problemlösen	1,2
WS 2018/2019	Seminar Allgemeine Psychologie	Komplexe Entscheidungen im Kontext Umwelt	1,3
WS 2017/2018	Seminar Allgemeine Psychologie	Kognition und Klimawandel	1,3
SoSe 2017	Forschungsorientierte Vertiefung Allgemeine Psychologie	Psychologie des Klimawandels: Verstehen, Entscheiden, Problemlösen	1,2
WS 2016/2017	Forschungsorientierte Vertiefung Allgemeine Psychologie	Kognition und Klimawandel: Verstehen, Entscheiden, Problemlösen	1,8
SoSe 2014	Seminar Allgemeine Psychologie	Kausalität im Kontext Klima(wandel)	1,9
SoSe 2015	Seminar Allgemeine Psychologie	Kausalität, Klima & Co.	1,2

PhD (Co-)Supervision

[1] Mariam Katsarava (2021, *magna cum laude*). Title of thesis: “Design and usage of line graphs in the visualization of climate change data”.

[2] Nadia Said, PhD in Psychology (2019, *magna cum laude*) in interdisciplinary project between mathematical modeling and cognitive psychology. Title of thesis: "Understanding Cognitive Processes Underlying Belief Polarization and Function-Learning: Experimental and Modeling Approaches"

Student Supervision

- *Graphische Darstellung von Stock-Flow Systemen: Auswirkungen einer veränderten Informationsdarstellung auf das Verständnis*—BSc thesis, Carlotta Riesmeier
- *The role of subjective knowledge: Do we commit to more pro-environmental actions when we feel more knowledgeable?* –MSc thesis, Maria Doblinger
- *The effects of framing on climate-friendly intention and behavior* –BSc thesis, Annika Reicherter
- *Fighting Climate Change with Certainty: Potential text-cased manipulations of confidence and its impact on climate change-related action and cognition* – BSc thesis, Sorgenfrei, Walter
- *Science meets policymakers. Assessing the comprehension of IPCC graphs on climate-related health risks*—M.Sc thesis, Kilian Ramisch
- *The impact of direct feedback on overconfidence in knowledge regarding climate change*—BSc thesis, Julian Strauch
- *Managing renewable resources under cognitive constraints* – MSc thesis, Erika Riesebell
- *Thematische Präferenzen zur Reduzierung von CO₂-Emissionen in Abhängigkeit von soziodemographischen Variablen in europäischen Haushalten* – MSc thesis, Alexandra Aldoshina
- *Implicit and explicit learning in systematically varied dynamic system control tasks* – MSc thesis, Jan Hundertmark
- *Die Abweichung des individuellen vom durchschnittlichen CO₂-Fußabdruck als Prädiktor zur Umsetzung emissionsreduzierender Maßnahmen* – BSc thesis, Seval Akbal
- *Komplexe Problemlösung--der Spiegel meiner Persönlichkeit* – BSc thesis, Semantha Ebert
- *Kommunikation klimabezogener Daten mittels Graphen* – BSc thesis, Maria Doblinger

Service

2022-

Member of the **Scientific Advisory Council** „Energie, Umwelt & Nachhaltigkeit“, FernUniversität Hagen

Associate Editor of the newly founded fully open-access journal Global Environmental Psychology (GEP), funded by The Leibnitz Institute for Psychology (ZPID)

Ad-hoc reviewer for: Nature Climate Change, Climatic Change, Harvard Misinformation Review, Cognition, Cognitive Science, Journal of Environmental Psychology, Environmental Communication, Frontiers in Psychology, Journal of Dynamic Decision Making, System Dynamics Review, Annual Meeting of the System Dynamics Conference, Annual Meeting of the Society of Judgment and Decision Making, Swiss National Science Foundation