

# Mirko Thalmann, Ph.D.

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## Work History

- 2024/02 – current    📌 **Postdoc**, *Helmholtz Institute for Human-Centered AI, Munich, Germany.*
- Leading research projects with the aim of understanding the adaptivity of mental representations, and the generality of learning and decision processes.
  - Supervising PhD students and Master students.
- 2021/08 – 2024/01    📌 **Postdoc**, *Max Planck Institute for Biological Cybernetics, Tuebingen, Germany.*
- Conducting a research project to understand the adaptivity of mental representations as a main researcher: study design, study execution, communication & presentation, publication.
  - Co-supervising PhD students and Master students.
- 2018/04 – 2021/06    📌 **Senior / Data Scientist**, *BonusCard.ch AG, Zurich, Switzerland.*
- Developing, evaluating, and putting machine-learning models into productive end-to-end pipelines.
  - Conducting statistical analyses (e.g., survival models, regression models) and visualizing results for business stakeholders.
  - Developing an SQL-based framework for scheduling model runs in different languages (SQL, python, and R), storing results in centralized location, and supervising models with a logging and monitoring system.
- 2014/03 – 2018/01    📌 **PhD in Cognitive & Mathematical Psychology**, *Cognitive Psychology Unit, University of Zurich, Zurich, Switzerland.*
- Title: "Chunking & Rehearsal in Working Memory: A Matter of Central Attention?".
  - Formulating hypotheses within statistical and/or computational models.
  - Designing and programming experiments.
  - Testing models on data and deriving conclusions.
  - Written and oral communication of ideas and results.
  - Lecturing seminar "Debates in Cognitive Psychology".
- 2021/08 – 2024/01    📌 **Doc.Mobility Research Stay**, *School of Psychology, UNSW, Sydney, Australia.*
- Writing a grant proposal successfully (Grant received from Swiss National Science Foundation).
  - Building a computational model predicting three different types of response data at once (recognition accuracies and RTs & recall on circular scale).
  - Fitting the model and computing model predictions.

## Education & Professional Training

09/2021 – 02/2022	📖 <b>Mathematics for Machine Learning</b> with DeepLearning.AI at coursera.org.
11/2020 – 03/2021	📖 <b>Deep Learning Specialization</b> with DeepLearning.AI at coursera.org.
04/2017 – 02/2021	📖 <b>Books/Self-Taught:</b> Statistical Rethinking, R4DS, Advanced R, Python Crash Course, Python Data Science Handbook.
07/2016	📖 <b>Scientific Programming with python</b> , Physics Institute, University of Zurich.
06/2015	📖 <b>Comput. Modeling of Cognition</b> , Two-week workshop, Laufen, Germany.
01/2014	📖 <b>MSc Psychology</b> , Major: Cognitive Psychology and Neuropsychology, Minor: Law, University of Zurich.

## Skills

Languages	📖 German*****, English****, French***, Italian**, Spanish*.
Coding	📖 R, python, SQL, $\LaTeX$ , git, matlab, SPSS
Misc.	📖 Alpinism, Salsa, Cooking, Movies, Taekwondo (first Dan), Boxing

## Ad-Hoc Review Activity






Cognitive Research: Principles and Implications, Cortex, Memory & Cognition, Open Mind

## References


Eric Schulz	📖 <b>Helmholtz Institute for Human-Centered AI</b> , Munich, Germany.
Klaus Oberauer	📖 <b>Cognitive Psychology Unit, University of Zurich</b> , Switzerland.
Evie Vergauwe	📖 <b>Working Memory, Cognition, &amp; Development, Univ. of Geneva</b> , Switzerland.
Chris Donkin	📖 <b>Comp. Modeling in Psychology, Ludwigs Max. University</b> , Munich, Germany.

## Research Publications

- 1 A. K. Jagadish, J. Coda-Forno, M. Thalmann, E. Schulz, and M. Binz, *Ecologically rational meta-learned inference explains human category learning*, arXiv:2402.01821 [cs], Feb. 2024. [DOI: 10.48550/arXiv.2402.01821](#). (visited on 05/23/2024).
- 2 T. A. Schäfer, M. Thalmann, E. Schulz, C. F. Doeller, and S. Theves, *The hippocampus supports interpolation into new states during category abstraction*, en, May 2024. [DOI: 10.1101/2024.05.14.594185](#). (visited on 07/18/2024).
- 3 M. Thalmann, T. A. J. Schäfer, S. Theves, C. F. Doeller, and E. Schulz, “Task imprinting: Another mechanism of representational change?” *Cognitive Psychology*, vol. 152, p. 101 670, Aug. 2024, ISSN: 0010-0285. [DOI: 10.1016/j.cogpsych.2024.101670](#). (visited on 07/17/2024).
- 4 M. Thalmann and E. Schulz, *The Generalization Artist - Or: How Can We Characterize Human Generalization?* en-us, Jun. 2024. [DOI: 10.31234/osf.io/k6ect](#). (visited on 07/11/2024).
- 5 S. Wu, M. Thalmann, and E. Schulz, “Motif Learning Facilitates Sequence Memorization and Generalization,” en-us, Dec. 2023, Publisher: OSF. [URL: https://osf.io/2a49z](#) (visited on 12/20/2023).

- 6 M. Thalmann, A. S. Souza, and K. Oberauer, "How does chunking help working memory?" *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 45, no. 1, pp. 37–55, 2019, Place: US Publisher: American Psychological Association, ISSN: 1939-1285(Electronic),0278-7393(Print).  DOI: 10.1037/xlm0000578.
- 7 M. Thalmann, A. S. Souza, and K. Oberauer, "Revisiting the attentional demands of rehearsal in working-memory tasks," en, *Journal of Memory and Language*, vol. 105, pp. 1–18, Apr. 2019, ISSN: 0749-596X.  DOI: 10.1016/j.jml.2018.10.005. (visited on 06/28/2021).
- 8 A. S. Souza, M. Thalmann, and K. Oberauer, "The precision of spatial selection into the focus of attention in working memory," en, *Psychonomic Bulletin & Review*, vol. 25, no. 6, pp. 2281–2288, Dec. 2018, ISSN: 1531-5320.  DOI: 10.3758/s13423-018-1471-4. (visited on 02/22/2021).
- 9 M. Thalmann, M. Niklaus, and K. Oberauer, "Estimating Bayes Factors for Linear Models with Random Slopes on Continuous Predictors," *PsyArXiv*, Oct. 2017.  DOI: 10.17605/OSF.IO/4XQVR. (visited on 11/19/2017).
- 10 M. Thalmann and K. Oberauer, "Domain-specific interference between storage and processing in complex span is driven by cognitive and motor operations," en, *Quarterly Journal of Experimental Psychology*, vol. 70, no. 1, pp. 109–126, Jan. 2017, ISSN: 1747-0218, 1747-0226.  DOI: 10.1080/17470218.2015.1125935. (visited on 02/26/2021).

## Talks (Selected)

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| 2024/07/21 |  <b>Annual Meeting of the Society for Mathematical Psychology</b> , Tilburg, NL. Title: Are Exploration Strategies Suitable for Individual Differences Research?  |
| 2024/06/29 |  <b>ASIC</b> , Molveno, IT. Title: Are Exploration Strategies Suitable for Individual Differences Research?   |
| 2024/04/18 |  <b>University of Geneva, Cognitive Development Chair, Faculty of Psychology and Educational Sciences</b> Geneva, Switzerland. Masters Seminar. Title: From Science to Industry – And All The Way Back. Or: Finetuning your Importance Weights<br> <b>University of Geneva, Cognitive Development Chair, Faculty of Psychology and Educational Sciences</b> Geneva, Switzerland. Title: Are Exploration Strategies Suitable for Individual Differences Research? |
| 2023/08/31 |  <b>UCL, Department of Experimental Psychology</b> , London, UK. Title: How to (not) measure exploration strategies in a few-armed bandit task?   |
| 2023/07/04 |  <b>ASIC</b> , Kranjska Gora, SLO. Title: How to (not) measure exploration strategies in a two-armed bandit task  |
| 2022/06/21 |  <b>ASIC</b> , Chamonix, FR. Title: Are Mental Representations Shaped by Task-Specific Goals?   |