

Benjamin Kowialiewski, PhD

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Research Experience

Postdoc position

University of Zurich, Zurich (Switzerland)

- Research Unit: Cognitive Psychology 01.2021 – Present
- Supervisor: [Klaus Oberauer](#)
Topic: Understanding the relationship between working memory and long-term memory using computational models

Postdoc position

Université Grenoble Alpes, Grenoble (France)

- Research Unit : LPNC - Laboratoire de Psychologie et NeuroCognition 10.2019 – 12.2020
- Supervisors: [Sophie Portrat](#), [Benoît Lemaire](#)
- Topic: Modeling compression mechanisms in working memory using a connectionist approach

PhD position

University of Liège, Liège (Belgium)

- Research Unit: Psychology and Neuroscience of Cognition (PsyNCog) 10.2015 – 09.2019
- Supervisor: [Steve Majerus](#)
- Topic: Understanding the impact of linguistic knowledge on working memory

Education

PhD in Psychology

University of Liège, Liège (Belgium)

10.2015 – 09.2019

Psychology and Neuroscience of Cognition Research Unit (PsyNCog)

Master of Science in Psychology. Specialized in Cognitive Neuroscience

University of Liège, Liège (Belgium)

07.2013 – 09.2015

Bachelor of Science Psychology. Specialized in Biopsychology

University of Liège, Liège (Belgium)

07.2010 – 06.2013

Additional Training

Fifth European Summer School on Computational and Mathematical Modeling of Cognition (CMMC)

07.2018

University of Burgundy, Couches (France) (<https://sites.uci.edu/cmmc/>)

Supervisors: Klaus Oberauer and [Robert M. French](#)

Publications

Research articles

In preparation

Kowialiewski, B., & Oberauer, K. (*in preparation*). Testing the response suppression mechanism of working memory using a modeling approach: A registered report. *Stage 1 registered report to-be-submitted in Journal of Experimental Psychology: Learning, Memory, and Cognition*

Kowialiewski, B., & Oberauer, K. (*in preparation*). A Working Memory Architecture Integrating Meaning. *To-be-submitted in Psychological Review*

Under review

Kowialiewski, B., Majerus, S., & Oberauer, K. (*under review*). Does semantic similarity affect immediate memory for order? Usually not, but sometimes it does. *Re-submitted after minor revisions in Journal of Experimental Psychology: Learning, Memory, and Cognition*. [10.31234/osf.io/e6px5](https://doi.org/10.31234/osf.io/e6px5)

Kowialiewski, B., Lemaire, & Portrat, S. (*under review*). Similarity-based compression in working memory: Implications for decay and refreshing models. *Major revisions in Psychonomic Bulletin & Review*

2023

Kowialiewski, B., Krasnoff, J., Mizrak, E., & Oberauer, K. (2023). Verbal working memory encodes phonological and semantic information differently. *Cognition*, 233, 105364. <https://doi.org/10.1016/j.cognition.2022.105364>

2022

Kowialiewski, B., Krasnoff, J., Mizrak, E., & Oberauer, K. (2022). The Semantic Relatedness Effect in Serial Recall : Deconfounding Encoding and Recall Order. *Journal of Memory and Language*, 127. <https://doi.org/10.1016/j.jml.2022.104377>

Kowialiewski, B., Lemaire, B. & Portrat, S. (2022). Between-item Similarity Frees Up Working Memory Resources Through Compression: A Domain-General Property. *Journal of Experimental Psychology: General*. <https://doi.org/10.1037/xge0001235>

2021

Kowialiewski, B., Gorin, S., & Majerus, S. (2021). Semantic knowledge constrains the processing of serial order information in working memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. <https://doi.org/10.1037/xlm0001031>

Kowialiewski, B., Lemaire, B., Majerus, S., & Portrat, S. (2021). Can activated long-term memory maintain serial order information? *Psychonomic Bulletin & Review*, 28, 1301-1312. <https://doi.org/10.3758/s13423-021-01902-3>

Kowialiewski, B., Lemaire, B., & Portrat, S. (2021). How does semantic knowledge impact working memory maintenance? Computational and behavioral investigations. *Journal of Memory and Language*, 117(104208). <https://doi.org/10.1016/j.jml.2020.104208>

2020

Kowialiewski, B., Van Calster, L., Attout, L., Phillips, C., & Majerus, S. (2020). Neural Patterns in Linguistic Cortices Discriminate the Content of Verbal Working Memory. *Cerebral Cortex*, 30(5), 2997-3014. <https://doi.org/10.1093/cercor/bhz290>

Kowialiewski, B., & Majerus, S. (2020). The varying nature of semantic effects in working memory. *Cognition*, 202, 104278. <https://doi.org/10.1016/j.cognition.2020.104278>

2019

Kowialiewski, B., & Majerus, S. (2019). Verbal working memory and linguistic long-term memory : Exploring the lexical cohort effect. *Memory & Cognition*, 47(5), 997-1011. <https://doi.org/10.3758/s13421-019-00898-5>

2018

Kowialiewski, B., & Majerus, S. (2018). The non-strategic nature of linguistic long-term memory effects in verbal short-term memory. *Journal of Memory and Language*, 101, 64-83. <https://doi.org/10.1016/j.jml.2018.03.005>

Kowialiewski, B., & Majerus, S. (2018). Testing the redintegration hypothesis by a single probe recognition paradigm. *Memory*, 26(9), 1256-1264. <https://doi.org/10.1080/09658211.2018.1448420>

2016

Gorin, S., **Kowialiewski, B., & Majerus, S. (2016).** Domain-Generality of Timing-Based Serial Order Processes in Short-Term Memory : New Insights from Musical and Verbal Domains. *PLOS ONE*, 11(12), e0168699. <https://doi.org/10.1371/journal.pone.0168699>

Conference papers

Kowialiewski, B., Lemaire, B., & Portrat, S. (2020). Semantic chunks save working memory resources: Computational and behavioral evidence. *Annual meeting of the Cognitive Science society*, 1466-1472.

Oral Communications

Invited talks

Kowialiewski, B. (2023). Encoding semantic information in working memory? *Talk presented as guest speaker at [Karl Christoph Klauer's](#) laboratory, Freiburg University, Freiburg, Germany.*

Kowialiewski, B., Lemaire, B., & Portrat, S. (2022). Between-item Similarity Frees Up Working Memory Resources Through Compression: A Domain-General Property. *Talk presented as guest speaker at [Valérie Camos'](#) laboratory, University of Fribourg, Fribourg, Switzerland.*

Kowialiewski, B., Oberauer, K., Remouchamps, R., & Majerus, S. (2022). Processing spatial information in working memory: a matter of relative distance. *Talk presented as guest speaker at [Ronald Van den Berg's](#) lab, University of Stockholm, Stockholm, Sweden.*

Kowialiewski, B. (2022). What do we know about the influence of semantic knowledge on verbal working memory? *Talk presented as guest speaker at [Evie Vergauwe's](#) laboratory, University of Geneva, Geneva, Switzerland.*

Kowialiewski, B., & Oberauer, K. (2021). Verbal working memory encodes phonological but not semantic representations. *Talk presented online as guest speaker at [the Language, Learning and Reading lab, SISSA](#), Trieste, Italy.*

Conference contributions: Talks

2023

Kowialiewski, B., Majerus, S., & Oberauer, K. (2023). Representing spatial information in working memory. *Talk to-be-presented at [TeaP 2023](#) as part of the "Computational approaches to modeling cognition" symposium, Trier, Germany.*

2022

Kowialiewski, B. & Oberauer, K. (2022). A working memory model integrating meaning. *Talk presented at [Psychonomics 2022](#), Boston, United States of America.*

Kowialiewski, B. & Oberauer, K. (2022). A working memory model integrating meaning. *Talk presented at [MathPsych 2022](#), Toronto, Canada.*

Kowialiewski, B., Krasnoff, J., Mizrak, E., & Oberauer, K. (2022). Working Memory Encodes Phonological but not Semantic Representations. *Talk presented at the Swiss Working Memory Meeting, University of Fribourg, Fribourg, Switzerland.*

Kowialiewski, B., Lemaire, B., & Portrat, S. (2022). Between-item Similarity Frees Up Working Memory Resources Through Compression: A Domain-General Property. *Talk presented at the Chunking project meeting, Grenoble, France.*

Kowialiewski, B., & Oberauer, K. (2022). A Working Memory Model Integrating Meaning. *Talk presented at the [TeaP 2022 conference](#), Online conference.*

2021

Kowialiewski, B., Lemaire, B., & Portrat, S. (2021). Information compression through between-item similarity: evidence from the visual domain. *Talk presented at the [Virtual Working Memory Symposium](#), Online conference.*

Kowialiewski, B., & Oberauer, K. (2021). Semantic Associations Increase Memory for Items, Not Binding. *Talk presented at the 62th Annual Meeting of the Psychonomic Society, Online conference.*

Kowialiewski, B., Lemaire, B., & Portrat, S. (2021). Semantic Knowledge Saves Working Memory Resources. *Talk presented at the Psycholinguistic in Flanders online conference, Online conference.*

2020

Kowialiewski, B., Lemaire, B., & Portrat, S. (2020). Resource reallocation in working memory through semantic chunks: Computational and behavioural evidence. *Talk presented at the [10th European Working Memory Symposium](#), Online conference.*

2019

Kowialiewski, B., Van Calster, L., Attout, L., Phillips, C., & Majerus, S. (2019). Neural patterns in linguistic cortices discriminate the content of verbal working memory. *Talk presented at Belgian Association for Psychological Sciences, Liège, Belgium.*

2018

Kowialiewski, B., & Majerus, S. (2018). Modélisation du système linguistique au sein d'une architecture de mémoire de travail. *Talk presented at Groupe de Contact Psycholinguistique et Neurolinguistique, University of Mons, Mons, Belgium.*

Kowialiewski, B., & Majerus, S. (2018). Semantic Effects In Verbal Short-term Memory: Where Do They Come From? *Talk presented at Belgian Association for Psychological Sciences, University of Ghent, Ghent, Belgium.*

2017

Kowialiewski, B., Gorin, S., & Majerus, S. (2017). Does Semantic Knowledge Influence Serial Order Processing In Short-term Memory? *Talk presented at Meeting of the Belgian Association for Psychological Science, Brussel, Belgium.*

Kowialiewski, B., & Majerus, S. (2017). Comment la rapidité d'accès lexicale influence-t-elle la mémoire à court terme verbale ? *Talk presented at Second meeting of the Groupe de Contact FNRS Psycholinguistique et Neurolinguistique, Liège, Belgium.*

2016

Kowialiewski, B., & Majerus, S. (2016). La contribution automatique des connaissances à long terme en mémoire à court terme verbale. *Talk presented at 40ème journée de Printemps de la Société de Neuropsychologie de Langue Française, University of Liège, Belgium.*

2015

Gorin, S., **Kowialiewski, B.**, Cespedes-Ortiz, C., & Majerus, S. (2015). Serial temporal order information in musical and verbal short-term memory. *Talk presented at biennial meeting of the Society for Music Perception and Cognition, Nashville, United States - Tennessee.*

Conference contributions: Posters

Kowialiewski, B., Remouchamps, R., Oberauer, K., & Majerus, S. (2022). Similarity Effects in Visuospatial Working Memory. *Poster session presented at the 2022 ESCOP conference, Lille, France.*

Kowialiewski, B., & Majerus, S. (2020). An interactive activation model of verbal working memory: Simulating psycholinguistic effects. *Poster session presented at 10th European Working Memory Symposium (EWOMS), Online conference.*

Kowialiewski, B., Lemaire, B., & Portrat, S. (2020). Semantic chunks save working memory resources: Computational and behavioral evidence. *Poster presented at the Annual meeting of the Cognitive Science society.*

Bouffier, M., **Kowialiewski, B.**, Attout, L., Gregoire, C., Phillips, C., & Majerus, S. (2020). Precision of neural codes involved in storing phonological information in working memory. *Poster session presented at 10th European Working Memory Symposium (EWOMS), Online conference.*

Bouffier, M., **Kowialiewski, B.**, Attout, L., Gregoire, C., Phillips, C., & Majerus, S. (2020). Precision of neural representations supporting auditory-verbal working memory. *Poster session presented at Belgian Association for Psychological Sciences (BAPS), Online conference, Belgium.*

Kowialiewski, B., Van Akelyen, D., & Majerus, S. (2019). Long-term memory effects in working memory are not always automatic: evidence from the imageability effect. *Poster session presented at 21st conference of the European Society for Cognitive Psychology, Tenerife, Spain.*

Kowialiewski, B., Van Akelyen, D., & Majerus, S. (2019). Where does the imageability effect in working memory come from? *Poster session presented at Belgian Association for Psychological Sciences, Liège, Belgium.*

Kowialiewski, B., Gorin, S., & Majerus, S. (2018). Effects of semantic and temporal grouping on serial order processing. *Poster session presented at Ninth European Working Memory Symposium, Pavia, Italy.*

Kowialiewski, B., Gorin, S., & Majerus, S. (2017). Semantic similarity interacts with serial order processing in short-term memory. *Poster session presented at 20th Meeting of the European Society for Cognitive Psychology, Potsdam, Germany.*

Kowialiewski, B., Gorin, S., & Majerus, S. (2017). La similarité sémantique influence-t-elle le traitement de l'ordre en mémoire à court terme ? *Poster session presented at 1ère Ecole Thématique CNRS TransMem, Île de Porquerolles, France.*

Kowialiewski, B., & Majerus, S. (2016). Automatic contribution of long-term knowledge to verbal short-term memory. *Poster session presented at Meeting of the Belgian Association for Psychological Science, Antwerp, Belgium.*

Kowialiewski, B., & Majerus, S. (2016). Automatic contribution of long-term knowledge to verbal short-term memory. *Poster session presented at 8th European Working Memory Symposium, Liège, Belgium.*

Kowialiewski, B., Gorin, S., & Majerus, S. (2015). Can item and serial order short-term memory components be distinguished in the musical short-term memory domain? *Poster session presented at meeting of the Belgian Association for Psychological Science, Brussels, Belgium.*

Grants

Postdoctoral researcher (Chargé de recherche FNRS) Fond National de la Recherche Scientifique – FNRS (F.R.S.-FNRS), Belgium	10.2023
Doctoral researcher (Aspirant FNRS) Fond National de la Recherche Scientifique – FNRS (F.R.S.-FNRS), Belgium	10.2015

Services

Reviews – Journals and organizations

Acta Psychologica
British Journal of Psychology
Grant proposal from NSERC (Natural Sciences and Engineering Research Council of Canada)
Frontiers in Neuroscience
Journal of Experimental Psychology: Human Perception & Performance
Journal of Memory and Language
Memory
Memory & Cognition
Nature Communications
Psychological Research
Psychonomic Bulletin & Review
Quarterly Journal of Experimental Psychology

Teaching

Seminars

The psychology of language (University of Zurich)	Spring semester 2022-2023
The psychology of memory (University of Zurich)	Fall semester 2021-2022

Student supervision

Modeling visuospatial working memory (1 Master student, University of Liège)	2021-2022
The link between linguistic knowledge and working memory (1 Bachelor student, University of Zurich)	2021-2022
Memory for pitch in auditory working memory (3 Bachelor students, University of Liège)	2021-2022
Semantic and phonological priming effects in lexical decisions (4 Bachelor students, University of Liège)	2021-2022
Semantic and phonological factors in working memory (2 Bachelor students, University of Liège)	2020-2021

Compression mechanisms in visuospatial working memory (1 Master student, University Grenoble-Alpes)	2019-2020
Understanding the imageability effect in working memory (3 Bachelor students, University of Liège)	2018-2019
Semantic interference effects in working memory (3 Bachelor students, University of Liège)	2018-2019
Semantic knowledge and serial order in working memory (2 Bachelor students, 1 Master student, University of Liège)	2016-2017
Lexical cohort effects in working memory (2 Bachelor students, University of Liège)	2016-2017
Testing the redintegration hypothesis (1 Master student, University of Liège)	2015-2016
The degree of automaticity of linguistic long-term memory effects in working memory (10 Bachelor students, University of Liège)	2015-2016

Technical skills

Statistical & mathematical knowledge:

- Frequentist statistics
- Bayesian statistics
- Cognitive modeling using simulated (i.e., connectionist architectures) & mathematical (i.e., closed-form expression) models
- Model fitting & model comparison techniques
- Machine learning, such as support vector machine (i.e., for neuroimaging data)
- Neural network models (see example of an [auto-encoder](#))
- Model benchmarking (see example on the [Primacy Model](#))

Programming skills, including:

- [Julia](#) (modeling) – *Proficient user*
- MATLAB (modeling & fMRI analyses) – *Proficient user*
- R (statistical analyses) – *Proficient user*
- JavaScript ([jQuery library](#)) + [TypeScript](#) ([online experiments](#), or see for instance my [game of life](#) implementation) – *Familiarity*
- HTML5 + CSS (online experiments) – *Familiarity*
- [Rust](#) (hobby) – *Beginner*

Spoken languages

- French – *Mother tongue*
- English – *Fluent*
- German – *Basic knowledge (A2)*