Naomi Baes

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Professional Profile

- Doctoral researcher bridging **Psychology** and **Natural Language Processing**, designing **scalable computational methods** to model **semantic change** and quantify its **social and cultural drivers**, with applications in **mental health**.

- Lead developer of *SIBling*, a multidimensional linguistic model of lexical semantic change, and of *LSC-Eval*, a general framework for evaluating and comparing semantic change methods using LLM-generated synthetic benchmark datasets.

- Research accepted at top-tier venues in NLP and Computational Social Science: 10 journal articles (psychology, computational social science); 3 A*-ranked NLP conference proceedings (**ACL**); 1 workshop paper at **EMNLP** (LChange); plus invited talks at international labs and conferences (Change is Key!, Utrecht University, National Research Council).

- Contributes to global **SemEval** efforts: BRIGHTER (Multilingual emotion recognition datasets for 28 languages), BLEnD (LLM Benchmark for Everyday Multicultural Knowledge); serves on **program committees** (NLP4Democracy; SEM2025).

Education

PhD	**Doctor of Philosophy in Psychology/Natural Language Processing** Melbourne School of Psychological Sciences *Supervisors: Professor Nick Haslam and Dr Ekaterina Vylomova* *Advisors: Professor Yoshihisa Kashima and Professor Charles Kemp* *Award: Aus. Gov. Research Training Program Scholarship (Fee Offset & Stipend)*	**University of Melbourne** Submission: June 2026
GDPA	**Graduate Diploma in Psychology (Advanced), First Class Honours** Melbourne School of Psychological Sciences *Supervisors: Professor Nick Haslam and Dr Ekaterina Vylomova* *Award: Commonwealth Supported Place*	**University of Melbourne** December 2021
GDP	**Graduate Diploma in Psychology, First Class Honours** Melbourne School of Psychological Sciences *Capstone Supervisor: Professor Charles Kemp*	**University of Melbourne** December 2020
BIDS	**Bachelor of International Development Studies, Early Achievers' Status** Faculty of Education and Arts	**Australian Catholic University** December 2014

Technical Skills

Programming Languages	Python (Pandas, NumPy), R (dplyr, data.table), Bash (Tools)
NLP Tools & Libraries	Hugging Face Transformers (sentence encoders, contextual embeddings), spaCy, NLTK
Corpus Processing	grep, dependency parsing, lemmatization, collocate extraction
Machine Learning	scikit-learn (classification, clustering, regression), applied use of PyTorch/TensorFlow for PLMs
Statistical Analysis	Correlation, Regression (OLS, GLS, GLM, Mixed-effects, ARDL), ANOVA, *t*-tests, MDS, PCA
Data Visualisation	ggplot2, Matplotlib, Seaborn, Google Sheets
Infrastructure & Tools	Spartan (HPC system), SLURM, Git, VS Code, Vim, LaTeX, LIWC, TDM Studio (JupyterLab)

Research Experience (Selected)

Research Internship (On-Site)　　　　　　　　　　　　　　　　　　　　**University of Gothenburg**
Department of Philosophy, Linguistics, and Theory of Science; Supervisor: Nina Tahmasebi　　August – September 2025

- Progress a major project (with postdoc and PI, including researchers across 4 departments).
- Present research program at the Change is Key! conference, attend the consortium meeting, and give 2 other invited talks at international research groups (University of Utrecht and the National Research Council Canada).

Doctoral Researcher   **University of Melbourne**
Melbourne School of Psychological Sciences; Supervisors: Nick Haslam & Ekaterina Vylomova   June 2023 – June 2026
- Develop *SIBling*, a multidimensional model of lexical semantic change grounded in historical linguistics & psychology.
- Design distributional semantics methods (annotated lexica, language models) to quantify shifts in dimensions (SIB).
- Build *LSC-Eval*, a benchmarking framework for evaluating semantic change methods with LLM-gen. synthetic sets.
- Analyze diachronic corpora (1970+)—psychology abstracts, general text, media—to identify sociocultural trends.
- Publish in top NLP and psychology venues, including *ACL Proceedings*, and attend international conferences.
- Scale and validate SIBling framework.
- Provide co-supervision to Honours student for thesis (2025) on the semantic change of *ADHD*, providing support programming, interpretation of analyses, and manuscript preparation. [PSYC40010]

Research Assistant in Concept Creep   **University of Melbourne**
Melbourne School of Psychological Sciences; Supervisor: Professor Nick Haslam   July 2023 –
- Supervised and trained research assistants to code labels and compile data (science academies data, NYT articles)
- Consulted with domain experts to source and compile new corpora (New York Times Developer Portal, PubMed)
- Pre-processed diachronic text corpora (cleaning, lemmatization, dependency parsing) for downstream linguistic tasks
- Programmed scripts to process corpora and extract results for publication (e.g., frequency trends of target terms)

Predoctoral Research Assistant in Concept Creep   **University of Melbourne**
Melbourne School of Psychological Sciences; Supervisor: Professor Nick Haslam   Jan 2023 – Jun 2023
- Managed 12 projects independently under supervision of PI (completed 4, progressed 4, initiated 4)
- Extracted linguistic information from large-scale corpora using dynamic programming (ntf, collocates, adjective mods)
- Conducted exploratory analyses (MDS) and hypothesis testing on big data using logistic regression, *t*-tests, and ANOVA

Research Assistant   **Swinburne University of Technology**
Australian Leadership Index; Supervisors: A/Prof Samuel Wilson, Dr Vlad Demsar, Dr Melissa Wheeler   Aug 2022 – Mar 2023
- Reviewed literature; identified method; advanced nationally significant project on public perceptions of leadership
- Preprocessed and statistically analysed longitudinal text dataset of attitudes across the Australian population
- Extracted and interpreted latent themes in corpus data using principal component analysis; co-authored paper

Research Assistant to Charles Kemp   **University of Melbourne**
Computational Cognitive Sciences Lab; Supervisor: Professor Charles Kemp   Jan 2021 - Jan 2023
- Constructed a multilingual dataset (38 languages) by manually extracting grammatical patterns (word meaning forms)
- Liaised with researchers globally (CET, GMT, AEDT) to compile grammatical number data for computational modeling
- Assembled a cultural astronomy database detailing cross-cultural semantic variation in references to celestial objects

Psychology Capstone Project   **University of Melbourne**
Melbourne School of Psychological Sciences; Supervisor: Professor Charles Kemp   Jun 2021 - Nov 2021
- Investigated if precipitation in language's geographic region predicts prevalence of rain-related vocabulary in its dict.
- Linked bilingual dictionary data (word counts across 248 languages) w their glottocode and geospatial rainfall datasets
- Modelled results using mixed effects logistic regression to test if precipitation predicts likelihood of rain-related nouns

Research Intern / Honours Student / Affiliated Researcher   **University of Melbourne**
Social/Personality Laboratory; Supervisors: Professor Nick Haslam & Dr Ekaterina Vylomova   2021 - 2022
- Led a team project analysing sentiment in psychology corpus data; co-drafted manuscript resulting in a publication
- Developed novel method for evaluating the semantic severity of concepts (affect ratings of collocates) leading to paper
- Supported Prof Nick Haslam in supervising Yu Xiao's 2022 Honours thesis (PSYC40010), providing programming (index computation, plotting), result interpretation, and manuscript preparation—culminating in a *PLOS ONE* publication

Publications

Summary (as of 14/09/2025): *h*-index: 6 [Google Scholar], 4 [Scopus].
Total scholarly publications: 14 (10 journal articles; 3 conference proceedings — all A* ACL; 1 workshop proceedings paper).
Popular press: 3.

Journal Publications/Conference Proceedings: ....

First Author (5)

Naomi Baes, Raphael Merx, Nick Haslam, Ekaterina Vylomova, and Haim Dubossarsky. (2025). LSC-Eval: A General Framework to Evaluate Methods for Assessing Dimensions of Lexical Semantic Change Using LLM-Generated Synthetic Data. *In Findings of the Association for Computational Linguistics: ACL 2025, pages 10905–10939, Vienna, Austria. Association for Computational Linguistics*. [link]

Role: Led end-to-end development—conceptual design, synthetic dataset construction, benchmarking, experiments, writing.

Baes, N., Haslam, N., Vylomova, E. (2024). A Multidimensional Framework for Evaluating Lexical Semantic Change with Social Science Applications. In *Proceedings of the 62nd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 1390–1415, Bangkok, Thailand. *Association for Computational Linguistics*. [link]

Role: Led study design, method development (contextualised embeddings, affect rated lexica), regression analysis, writing.

Baes, N., Haslam, N., & Vylomova, E. (2023, December). Semantic Shifts in Mental Health-Related Concepts. In *Proceedings of the 4th Workshop on Computational Approaches to Historical Language Change*, pages 119–128, Singapore. *Association for Computational Linguistics*. [link]

Role: Led study design, data processing, developed novel method for evaluating cultural trend (pathologisation), writing.

Baes, N., Vylomova, E., Zyphur, M., & Haslam, N. (2023). The semantic inflation of "trauma" in psychology. *Psychology of Language and Communication, 27*(1), pages 23–45. [link]

Role: Led project to publication: identified research gap, developed novel method to evaluate semantic severity of concepts.

Baes, N., Speagle, H., & Haslam, N. (2022). Has Psychology Become More Positive? Trends in Language Use in Article Abstracts. *Frontiers in Psychology, 30*(13):870549. [link]

Role: Led project, conceptualisation, data processing (LIWC), statistical analysis (correlation, IRR), writing.

Last Author (4)

Kiropoulos, L. A., Rozenblat, V., **Baes, N.** (2024) Inflammatory proteins related to depression in multiple sclerosis: A systematic review and meta-analysis. *Brain, Behavior, & Immunity - Health, 43*(2025):100939. [link]

Role: Systematic review, run meta-analyses, method and results write-up, manuscript proofreading and incorporate reviews.

Haslam, N., **Baes, N.** (2024). What should we call mental ill health? Historical shifts in the popularity of generic terms. *PLOS Mental Health, 1*(1):e0000032. [link]

Role: Corpus acquisition and preprocessing, Extract normalised term frequencies, run multidimensional scaling analysis.

Haslam, N., & **Baes, N.** (2023). Science of mind and behaviour or allied health profession? Changes in the organisational location of psychology in Australian universities. *Australian Journal of Psychology, 75*(1):2182140. [link]

Role: Compile dataset, co-design methodology, statistical analysis, method and results write-up.

Haslam, N., & **Baes, N.** (2023). Scientific eminence and scientific hierarchy: bibliometric prediction of fellowship in the Australian Academy of Science. *Scientometrics, 128*(12), pages 6659–6674. [link]

Role: Conceptualise study design with PI, compile dataset, logistic regression analysis, writing.

Middle Author (5)

Shamsuddeen Hassan Muhammad, Nedjma Ousidhoum, Idris Abdulmumin, Jan Philip Wahle, Terry Ruas, Meriem Beloucif, Christine de Kock, Nirmal Surange, Daniela Teodorescu, Ibrahim Said Ahmad, David Ifeoluwa Adelani, Alham Fikri Aji, Felermino D. M. A. Ali, Ilseyar Alimova, Vladimir Araujo, Nikolay Babakov, **Naomi Baes**, Ana-Maria Bucur, Andiswa Bukula, Guanqun Cao, Rodrigo Tufiño, Rendi Chevi, Chiamaka Ijeoma Chukwuneke, Alexandra Ciobotaru, Daryna Dementieva, Murja Sani Gadanya, Robert Geislinger, Bela Gipp, Oumaima Hourrane, Oana Ignat, Falalu Ibrahim Lawan, Rooweither Mabuya, Rahmad Mahendra, Vukosi Marivate, Alexander Panchenko, Andrew Piper, Charles Henrique Porto Ferreira, Vitaly Protasov, Samuel Rutunda, Manish Shrivastava, Aura Cristina Udrea, Lilian Diana Awuor Wanzare, Sophie Wu, Florian Valentin Wunderlich, Hanif Muhammad Zhafran, Tianhui Zhang, Yi Zhou, and Saif M. Mohammad. 2025. BRIGHTER: BRIdging the Gap in Human-Annotated Textual Emotion Recognition Datasets for 28 Languages. *In Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 8895–8916, Vienna, Austria. Association for Computational Linguistics.[link]

Role: Worked in team to construct Romanian dataset (gold standard annotation) - one of 28 low-resource languages.

***Best Resource Paper Award** at ACL Main Conference 2025*

Wheeler, M. A., Wilson, S. G., **Baes, N.**, & Demsar, V. (2024). A search for commonalities in defining the common good: Using folk theories to unlock shared conceptions. *British Journal of Social Psychology, 63*(2), pages 956–974. [link]

Role: Conceptualisation (research gap, method design), data processing (LIWC), thematic analysis (PCA), writing.

Haslam, N., **Baes, N.**, & Haghani, M. (2024). The Structure and Evolution of Social Psychology: A Co-citation Network Analysis. *The Journal of Social Psychology*, 2363354, pages 1–12. [link]

Role: Conceptualisation of results writeup, data entry for table of top citations in topic clusters and reference list, writing.

Xiao, Y., **Baes, N.**, Vylomova, E., & Haslam, N. (2023). Have the concepts of 'anxiety' and 'depression' been normalized or pathologized? A corpus study of historical semantic change. *PLOS ONE, 18*(6):e0288027. [link]
Role: Support lead author (honours student) in programming and results interpretation, polish paper for publication.

Chayadi, E., **Baes, N.**, & Kiropoulos, L. (2022). The effects of mindfulness-based interventions on symptoms of depression, anxiety, and cancer-related fatigue in oncology patients: A systematic review and meta-analysis. *PLOS ONE, 17*(7):e0269519. [link]
Role: Update systematic review, meta-analyses, assessment of risk of bias in RCTs, figures, tables, writing.

Manuscripts & Proposals under Review/ Preprints/ Getting Published (2): . . . .

Kashima, Y., Vylomova, E., Haslam, N., Hamamura, T., **Baes, N.** (2025). Culture in Psychology: A Cultural Dynamical Analysis. *Perspectives in Psychological Science*
Role: Conceptual development (economic index), regression analysis, plot results, method and results write-up.

Wheeler, A. M., Fine, C., Sojo V. E., Arthur, C. A. L., **Baes, N.** and Ryan, M. (2025). Do Fathers Have Real Freedom to Achieve Work-Family Balance? Identifying critical gaps in knowledge from a systematic review of fathers' uptake of parental leave entitlements. *Journal of Management Studies*
Role: Coded papers against categories in theoretical framework, drafted results, addressed some reviewer concerns.

Academic Awards and Grants

Current Ongoing Research Support:
- **AUD $135k** – *Australian Government Research Training Program Scholarship (Stipend)*   **Australian Government**
- *Research Training Program Scholarship (Fee Offset)*   **Australian Government**
  Details: Awarded a highly competitive national scholarship covering tuition and stipend   July 2023–Dec 2026
- **AUD $4,000** - *RHD Career Development Support scheme*   **Melbourne School of Psychological Sciences**
  Details: Trip: (1) IC2S2 (Sweden, Norrköping); (2) ACL (Austria, Vienna); (3) 2-month Internship at Change is Key! (CIK) @ University of Gothenburg (Sweden); (4) CIK Consortium Meeting (Uddevalla) & Conference (UoG)   2025
- **AUD $15k** - *Seed Funding*, The Fighting Harmful Online Communication Hallmark Research Initiative   2025-2026
  Project: Automatic Evaluation of Stigma in Online Communication.
  Research Team: Yulia Otmakhova, **Naomi Baes**, Jemima Kang, Mike Conway, Chris Groot, Jacinthe Flore, Nick Haslam

Other:
- **USD $200** - *EMNLP Sponsorship*, iguanodon.ai, Partial conference registration and ACL membership fee   2023
- **AUD $130k** - *Australian Government Research Training Program Scholarship*, Australian Gov. (2022-2025)   *Declined*
- **AUD $100** - *Advanced Psychological Theory & Practice Prize*, Melbourne School of Psychological Sciences, Top   2020
- *Best Capstone Presentation Award*, Melbourne School of Psychological Sciences, GDPA   2021
- *First Class Honours*, Melbourne School of Psychological Sciences, Awarded for academic excellence in GDPA   2021
- *Commonwealth Supported Place*, Australian Commonwealth Government, Graduate Diploma in Psychology (Adv)   2020
- *First Class Honours*, Melbourne School of Psychological Sciences, Awarded for academic excellence in GDP   2020
- *Early Achievers' Status*, Australian Catholic University, Awarded early entry for community service and leadership 2012

Invited Talks

- **Semantic Shifts in Mental Health Concepts**. *Mental Health Conference (October 2025)*. [Link]

- **Dimensions of Semantic Change: Applying the SIBling Framework to Mental Health Concepts**. *University of Utrecht, Lab (16 September 2025)*. [Link]

  Dimensions of Semantic Change: Validation and Application of the SIBling Framework. [Slides]
  - **12 Sept 2025**: Change is Key! – Using LLMs in the Humanities and Social Sciences (full-day conference), University of Gothenburg, Department of Philosophy, Linguistics and Theory of Science [Link]
  - **16 Sept 2025**: Invited talk, National Research Council Canada

- **A General Framework to Evaluate Methods for Assessing Dimensions of Lexical Semantic Change Using LLM-Generated Synthetic Data**. *Natural Language Processing Reading Group, CIS*, University of Melbourne (April 2025)

- **A Multidimensional Framework for Evaluating Lexical Semantic Change with Social Science Applications.** *Association for Computational Linguistics, Main Conference,* Bangkok, Thailand (August 2024). [Video/ Slides/ Poster]
- **Semantic Shifts in Mental Health-Related Concepts**. *LChange'23 at EMNLP*, Sentosa, Singapore (Dec 2023). [Slides]
- **The Concept Creep of Mental Illness**. *SASP–ACPID Conference*, Noosa, QLD (Nov 2023). [Slides] [Event]
- **The Semantic Inflation of 'Trauma' in Psychology**. *Computational Cognitive Sciences Lab, Complex Human Data Hub*, University of Melbourne (Apr 2022). [Slides]

Academic Service

Leadership Positions: ....
- Language Co-Lead for BLEnD SemEval-2026 shared task on cultural translations (English).
- Program Committee for the 1st workshop on NLP for Democracy (NLP4Democracy), at COLM 2025 in Montréal, Canada
- Program Committee for The 14th Joint Conference on Lexical and Computational Semantics (*SEM 2025), co-located with EMNLP in Suzhou, China

Ad-hoc Reviewer: ....
- *Journals*: 1) Psychological Trauma: Theory, Research, Practice, and Policy; 2) Journal of Biosocial Science; 3) Advances in Methods and Practices in Psychological Science; 4) PLOS Mental Health; 5) Journal of Medical Internet Research

Professional Development

Academic Conferences: ....
- **Change is Key! Full-Day Conference**, University of Gothenburg - Department of Philosophy, Linguistics and Theory of Science, Sweden (September 12 2025). *Presenter & Attendee*. [Programme]
- **Language models And RePresentations (LARP) 2025**, Uni. of Gothenburg (September 2025). *Attendee*. [Program]
- **ACL 2025 (63rd Annual Meeting)**, Vienna, Austria (July-Aug 2025). *Poster Presenter & Conference Attendee*. [Program]
- **IC2S2 2025 (11th International Conference on Computational Social Science)**, Norrköping, Sweden (July 2025). *Poster Presenter & Conference Attendee*. [Program]
- **Google Australia Research@Sydney Student Event**, Google Sydney Aus. (Feb 2025). *PhD Student Attendee*. [Link]
- **ACL 2024 (62nd Annual Meeting)**, Bangkok, Thailand (Aug 2024). *Poster Presenter & Conference Attendee*. [Program]
- **EMNLP 2023**, Sentosa, Singapore (Dec 2023). *Workshop Presenter (LChange'23), Conference Attendee & Mentee (with Syrielle Montariol)*. [Program]
- **SASP–ACPID 2023**, Noosa, QLD (Nov 2023). *Presenter & Conference Attendee*. [Abstract Book]
- **AIIA National Conference**, Canberra (Oct 2014). *Conference Attendee & Student Participant in the Aid & Development Masterclass (with Dr Janet Hunt)*. [Report]

Summer Schools/Workshops/Consortium Meetings: ....
- **Change is Key! Consortium Meeting**, Uppsala, Sweden (September 9-11 2025). *Attendee*
- **ESSLLI 2024 (35th European Summer School in Logic, Language and Information)**, KU Leuven, Belgium (Jul–Aug 2024). [Programme]
- **Change is Key! Workshop @ ESSLLI: Computational Models for Semantic Change and their Applications in Multidisciplinary Research**, KU Leuven, Belgium (Jul–Aug 2024). *Instructors: Haim Dubossarsky, Pierluigi Cassotti*. [Details]
- **LChange'23 Workshop @ EMNLP: 4th International Workshop on Computational Approaches to Historical Language Change**, Sentosa, Singapore (Dec 2023). [Event Link]
- **SASP Summer School: How Evolution Shaped the Social Mind**, University of Melbourne (Nov 2023). *Instructors: Khandis Blake, Amanda Rotella, Beatrice Alba*. [Event]
- **Mainstream Media Workshop**, Australian Science Media Centre, University of Melbourne (Oct 2023)

Technical Skill Development: ....
- Graduate-level training in **COMP90042: Natural Language Processing**, **COMP90049: Introduction to Machine Learning**, and **High Performance Computing Workshops** (Job Submission Approaches; Parallel and High Performance Python; Parallel Programming and Performance), University of Melbourne Research Computing Services.

Professional Memberships: ....
- Association for the Advancement of Artificial Intelligence: Washington, DC, US   2025–
- Mental Health PhD Program, Melbourne School of Psychological Sciences, University of Melbourne, AUS   2024–
- Association for Computational Linguistics: Stroudsburg, Pennsylvania, US   2023–
- Society of Australasian Social Psychologists: Sydney, AU   2023–

Teaching Experience

Teaching Assistant, BUSA90543: Natural Language Processing   **University of Melbourne**
Melbourne Business School; Subject Coordinator: A/Prof Jey Han Lau   May–July 2025
- Co-run weekly 2-hr workshops (alternate leading Worksheet Q&A, and Python application: Led POS tagging, Neural Networks: Feed Forward, Recurrent, LSTM; PLMs and LLMs); Support students to understand/ program algo./models.

Sessional Marker, PSYC90100: Applied Research Methods   **University of Melbourne**
Melbourne School of Psychological Sciences; Coordinator: Prof Nick Haslam   Nov 2024
- Marked 40 postgraduate exams for Masters in Applied Psychology subject according to tight deadline.

Academic Tutor (Psychology, Research Methods & Statistics)   **Private Tutoring Service**
Students from 6+ Australian universities   Mar 2022–present
- Tutored 70+ students across AQF levels 7–9; advise on academic writing, research design, and theses; proofread.