Naomi Baes

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Professional Profile

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

- Lead author 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 international venues in NLP and Computational Social Science, including **EMNLP** (LChange'23 Workshop), **ACL 2024** (main proceedings, A*-ranked), and **IC2S2 2025**.

- Collaborates with interdisciplinary teams across NLP, linguistics, and psychology, contributing to organising global efforts such as **SemEval-2025** (multilingual emotion recognition) and **SemEval-2026** (Semantic Relations between Word Senses).

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
NLP Tools & Libraries	spaCy, NLTK, Hugging Face Transformers, word2vec, BERT, XL-LEXEME
Machine Learning	scikit-learn, Keras, PyTorch, TensorFlow
Corpus Processing	grep, dependency parsing, lemmatization, collocate extraction
Statistical Analysis	Correlation, Regression, ANOVA, MDS, PCA, Time Series, *t*-tests
Data Visualisation	ggplot2, Matplotlib, Seaborn, Google Sheets
Infrastructure & Tools	Git, SLURM (HPC), Vim, LaTeX, NVivo, LIWC, Qualtrics, TDM Studio, ChatGPT

Research Experience (Selected)

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-generated synthetic sets.
- Analyze diachronic corpora (1970 onwards)—psychology abstracts, general text, media—to identify sociocultural trends.

- Publish in top NLP and psychology venues, including *ACL Proceedings*, and attend international conferences.
- Collaborate with global researchers (NLP, psychology, linguistics) to scale and validate conceptual change frameworks.
- Co-supervise Honours thesis (2025) on the semantic change of *ADHD*, providing support programming, analysis interpretation, and manuscript preparation. [PSYC40010]

Research Assistant in Concept Creep   University of Melbourne
Melbourne School of Psychological Sciences; Supervisor: Professor Nick Haslam   July 2023 – Dec 2024
- Supervised and trained research assistants to code labels and compile data (from science academies data, NYT articles)
- Consulted with domain experts to source and compile new corpora (New York Times Developer Portal, PubMed articles)
- Pre-processed diachronic text corpora (cleaning, lemmatization, dependency parsing) for downstream linguistic tasks
- Developed 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 principal investigator (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)
- Liased 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.
- Merged bilingual dictionary data (word counts across 248 languages) with 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) resulting in 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 1/05/2025): *h*-index: 5 [Google Scholar] , 4 [Scopus]. Total publications: 16 — including 12 journal articles, 3 preprints, 1 abstract, and 3 popular press articles. Total citations: 153.

Journal Publications: . . . .

First Author (4)

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 (language models, affect annotated lexica), statistical 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 (4)

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: Co-supervise lead author (honours student) in programming and results interpretation, finalise 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 (5): ....

Cassotti, P., **Baes, N.**, Camboim De Sa, J., Periti, F., Pascale, S., Haslam, N., Geeraerts, D., Tahmasebi, N. (in prep.). SenseRel: Modeling Semantic Relations Between Word Senses. *SemEval-2026 The 20th International Workshop on Semantic Evaluation*.
Role: Co-Led proposal development—design (evaluation metric), intensity seeds (annotated senses for train/test set), writing.

Baes, N., Merx, R., Haslam, N., Vylomova, E., Dubossarsky, D. (2025). A General Framework to Evaluate Methods for Assessing Dimensions of Lexical Semantic Change Using LLM-Generated Synthetic Data. *Association for Computational Linguistics*. [link]
Role: Led end-to-end development—conceptual design, synthetic dataset construction, benchmarking, experiments, writing.

Muhammad, S. H., Ousidhoum, N., Abdulmumin, I., Wahle, J. P., Ruas, T., Beloucif, M., de Kock, C., Surange, N., Teodorescu, D., Ahmad, I. S., Adelani, D. I., Aji, A. F. A., Ali, F. D. M. A., Alimova, I., Araujo, V., Babakov, N., **Baes, N.**, Bucur, A-M., Bukula, A., Cao, G., ... Mohammad, S. M. et al. (2025). BRIGHTER: BRIdging the Gap in Human-Annotated Textual Emotion Recognition Datasets for 28 Languages. *Association for Computational Linguistics*. [link]
Role: Worked in team to construct Romanian dataset (gold standard annotation) - one of 28 low-resource languages.

Kashima, Y., Vylomova, E., Haslam, N., Hamamura, T., **Baes, N.** (2025). Culture in Psychology: A Cultural Dynamical Analysis. *Personality and Social Psychology Review*
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). Barriers and Facilitators Shaping Fathers' Uptake of Parental Leave: A Capabilities Approach to Understanding an Important Dimension of Wellbeing and Gender Inequality. *Journal of Management Studies*
  Role: Coded papers against categories in theoretical framework, drafted results, addressed some reviewer concerns.

Manuscripts in Preparation (2): ....
Baes, N., Vylomova, E., Haslam, N. (in prep.). The Conceptual Change of Schizophrenia in American Media.
Baes, N., Vylomova, E., Haslam, N. (in prep.). Shifting Media Representations of Autism.
  Role: Leading the application of SIBling (my model of conceptual change) in news corpora, aiming to publish in top journal.

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

Other:
- **AUD $15k** - *Seed Funding*, The Fighting Harmful Online Communication Hallmark Research Initiative **UOM**
  Project: Automatic Evaluation of Stigma in Online Communication. March 2025–2026
  Research Team: Yulia Otmakhova, **Naomi Baes**, Jemima Kang, Mike Conway, Chris Groot, Jacinthe Flore, Nick Haslam
- **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
- *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

- **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: ....
- Program Committee for The 14th Joint Conference on Lexical and Computational Semantics (*SEM 2025), co-located with EMNLP in Suzhou, China (November 2025)
- Co-Organiser for SemEval-2026 Task: "SenseRel: Semantic Relations of Word Senses" - The 20th International Workshop on Semantic Evaluation *(pending acceptance of proposal to SemEval-2026 Task: 19 May 2025)*

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

- **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: ....

- **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 Multi-disciplinary 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 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: ....

- **COMP90042: Natural Language Processing** (12 weeks). Graduate-level audit, University of Melbourne (2024; 2025)
- **COMP90049: Introduction to Machine Learning** (12 weeks). Graduate-level audit, University of Melbourne (2024)
- **COMP10001: Foundations of Computing** (12 weeks). First-year audit, University of Melbourne (2024)
- **High Performance Computing Workshops** (8 hours each). University of Melbourne [Details]: (1) Introduction to Linux and HPC: Job Submission Approaches; (2) Parallel and High Performance Python: Parallel Programming, Performance

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 NLP workshops for MBA students; mark assignments, exams and support mature-age students.

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 (Research Methods & Psychology)   **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 assess.

Music Teacher (Piano, Violin, Theory)   **Private Studio / uLearn Music**
City of Casey   Jan 2010–Jan 2017
- Delivered lessons following AMEB and Suzuki method instruction; maintain 98% student retention across all age groups.