

Naomi Baes

Computational Social Science · Natural Language Processing · Psychology

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Professional Profile

- Researcher bridging Computational Social Science, Natural Language Processing, and Psychology, developing theory-driven computational frameworks that use language to reveal how meaning, mind, and culture evolve over time.
- Co-developer of *SIBling*, a multidimensional framework that models semantic change across Sentiment, Intensity, and Breadth, and co-creator of *LSC-Eval*, an evaluation framework that provides a method for building benchmarking suites that uses LLM-generated diachronic corpora to evaluate and compare methods for detecting semantic change.
- Published (14; 250+ citations) and presented at leading venues in NLP and Computational Social Science, including **ACL**, **EMNLP**, and **IC2S2**; invited talks at 3 international labs: Utrecht Uni., Change is Key!, National Research Council Canada.
- Active member of the international NLP community: contributor and co-organizer of SemEval shared tasks ([BRIGHTER](#), [BLEnD](#)), workshops ([LChange'26](#)), and serves on program committees ([NLP4Democracy](#), [*SEM 2025](#)).

Education

PhD	Doctor of Philosophy in Psychology/Natural Language Processing Melbourne School of Psychological Sciences <i>Supervisors: Professor Nick Haslam and Dr Ekaterina Vylomova</i> <i>Advisors: Professor Yoshihisa Kashima and Professor Charles Kemp</i> <i>Award: Aus. Gov. Research Training Program Scholarship (Fee Offset & Stipend)</i>	University of Melbourne Submission: June 2026
GDPA	Graduate Diploma in Psychology (Advanced), First Class Honours Melbourne School of Psychological Sciences <i>Supervisors: Professor Nick Haslam and Dr Ekaterina Vylomova</i> <i>Award: Commonwealth Supported Place</i>	University of Melbourne December 2021
GDP	Graduate Diploma in Psychology, First Class Honours Melbourne School of Psychological Sciences <i>Capstone Supervisor: Professor Charles Kemp</i>	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 & Corpus	Hugging Face Transformers, spaCy, NLTK; lemmatization, dependency parsing, collocates
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, <i>t</i> -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: Sweden) - Change is Key! <i>Department of Philosophy, Linguistics, and Theory of Science; Supervisor: Nina Tahmasebi</i>	University of Gothenburg August – September 2025
<ul style="list-style-type: none">• Advanced and completed benchmark paper on relations between word senses with an eight-person team (computational/theoretical linguists, psychologist) across six departments (Sweden, Belgium, Luxembourg, Australia).• Co-conceptualized study; co-designed experiments; annotated WordNet glosses to create gold-standard data for affective dimensions; computed reliability; optimized LLM prompts for automated annotation; drafted initial paper.	

- Presented research program at the *Change is Key!* conference; attended a 3-day consortium meeting; gave invited international talks at NLP labs (University of Utrecht; 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 model of lexical semantic change; implement toolkit to quantify *Sentiment*, *Intensity*, *Breadth*.
- Design and implement computational methods (normed collocational ratings, transformer-based models).
- Build *LSC-Eval*, a benchmarking framework that uses **LLM-generated** synthetic corpora to simulate and evaluate distinct kinds of semantic change; run parallelized experiments on HPC/SLURM.
- Apply the above to diachronic corpora (1970–present)—professional psychology, general language, and media—to trace semantic change in mental-health concepts and associated sociocultural dynamics.
- Publish in leading NLP and psychology venues (e.g., [ACL](#)) and disseminate research at international conferences.

Predoctoral/ Research Assistant in Concept Creep

University of Melbourne

Melbourne School of Psychological Sciences; Supervisor: Professor Nick Haslam

Jan 2023 –

- Contributed to 12 projects on the semantic expansion of harm-related concepts (“concept creep”)
- Designed and implemented computational workflows for large-scale corpus analysis, including feature extraction (normalized term frequencies, collocates, adjective modifiers) and exploratory modeling (MDS, regression, ANOVA).
- Preprocessed diachronic text corpora (cleaning, lemmatization, dependency parsing) for downstream NLP analyses
- Collaborated with domain experts and trained research assistants to identify, curate, and document [new data sources](#) (New York Times, PubMed), expanding the lab’s repository of psychological and media corpora.

Research Assistant

Swinburne University of Technology

Australian Leadership Index; Supervisors: A/Prof Samuel Wilson, Dr Vlad Demšar, Dr Melissa Wheeler

Aug 2022 – Mar 2023

- Reviewed literature; identified methods; advanced a nationally significant project on public perceptions of leadership.
- Preprocessed and statistically analysed longitudinal text data; extracted latent themes using PCA; co-authored [paper](#).

Research Assistant/ Research Project Student under Professor Charles Kemp

University of Melbourne

Computational Cognitive Sciences Lab, Melbourne School of Psychological Sciences

Jan 2021 – Jan 2023

- Constructed a multilingual dataset (38 languages) by extracting/annotating grammatical number systems and word-form mappings; collaborated across time zones (CET, GMT, AEDT) for [PNAS](#) publication.
- Built a cultural astronomy database documenting cross-cultural semantic variation in references to celestial objects.
- Co-designed and ran a project linking linguistic, geospatial, and climatic datasets (248 languages) and modelled results with mixed-effects logistic regression models.

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

Selected Publications

Summary (as of 9/10/2025): *h*-index: 6 [[Google Scholar](#)], 4 [[Scopus](#)].

Total publications: 14 (10 journal articles; 3 conference proceedings (A* ACL); 1 workshop proceedings paper). Press: 3.

Journal Publications/Conference Proceedings:

First Author

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: Lead author — co-designed the conceptual framework, synthetic dataset pipeline, and experimental setup. Jointly implemented the end-to-end LLM-generation pipeline/ evaluation framework and maintained the shared [GitHub repository](#).

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: Lead author - Led study design, method development (contextualised embeddings, affect rated lexica), [source code](#).

Last Author

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). 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

Shamsuddeen Hassan Muhammad, Nedjma Ousidhoum, Idris Abdulmumin, Jan Philip Wahle, Terry Ruas, Meriem Beloucif, Christine de Kock, Nirmal Surange, Daniela Teodorescu, , [...], Nikolay Babakov, **Naomi Baes**, Ana-Maria Bucur, [...], 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.

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**
 - **AUD \$4,000** - RHD Career Development Support scheme **Melbourne School of Psychological Sciences**
 - **AUD \$15k** - Seed Funding, [The Fighting Harmful Online Communication Hallmark Research Initiative](#) 2025-2026
- Details: Awarded a highly competitive national scholarship covering tuition and [stipend](#) July 2023–Dec 2026
- 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
- 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-Related Concepts.** *Mental Health PhD Program Conference (October 2025).* [\[Slides\]](#)

- **Dimensions of Semantic Change: Applying the SIBling Framework to Mental Health Concepts.** [Natural Language and Text Processing Lab] University of Utrecht (September 2025). [Slides]
- **Dimensions of Semantic Change: Validation and Application of the SIBling Framework.**
 - **September 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 [Event] [Slides]
 - **September 2025:** Invited talk, National Research Council Canada [Slides]
- **A General Framework to Evaluate Methods for Assessing Dimensions of Lexical Semantic Change Using LLM-Generated Synthetic Data.** *Natural Language Processing Reading Group*, 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]

Media and Outreach

Popular Press & Commentary:

- Nick Haslam, **Naomi Baes**, Ekaterina Vylomova, Yu Xiao). “Do we think about anxiety and depression differently now?” *Pursuit*, University of Melbourne, July 2023.
- Nick Haslam & **Naomi Baes**. “Mental illness, psychiatric disorder or psychological problem. What should we call mental distress?” *The Conversation*, June 2024.
- Melissa A. Wheeler, **Naomi Baes**, Samuel Wilson, & Vlad Demsar. “What does the ‘common good’ actually mean? Our research found common ground across the political divide.” *The Conversation*, January 2024.

Academic Service

Leadership Positions:

- **Workshop organizing committee** for The International Workshop on Computational Approaches to Language Change (LChange'26), co-located with [EACL2026](#) in Morocco, March 24-26 2026.
- **SemEval organizing committee** for [BLEnD SemEval-2026](#) shared task on evaluating cultural awareness in language models across 26 languages and 30 countries and regions (Language co-lead: Australian English).
- **Program Committee:** The 1st workshop on NLP for Democracy ([NLP4Democracy](#)), at COLM 2025 in Montréal, Canada
- **Program Committee:** The 14th Joint Conference on Lexical and Computational Semantics ([*SEM 2025](#)), EMNLP 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*
- **Workshops:** 1) [NLP4Democracy](#) (COLM 2025); 2) [SEM2025](#) (EMNLP 2025); 3) The 23rd Annual Workshop of the Australasian Language Technology Association ([ALTA 2025](#))

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]

Summer Schools/Workshops/Consortium Meetings:

- **Change is Key! Consortium Meeting**, Uddevalla, Sweden (September 9-11, 2025). *Attendee*
- **ESSLLI 2024 (35th European Summer School in Logic, Language and Information)**, 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). *Inst.: 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]

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 and Mentorship

Supervision Roles:

- Supervised and trained research assistants on corpus coding, data compilation for concept creep projects (2023–).
- Supported Prof Nick Haslam in supervising Honours theses (**PSYC40010**) on the semantic change of *anxiety and depression* (2022), and *ADHD* (2025), providing support for/ programming scripts, statistical analysis, and publication.
- Co-supervise research assistants on contextualized embedding extraction (fine-tuned BERT), dehumanization index computation using sentence embeddings.

Teaching Appointments:

Teaching Assistant, **BUSA90543: Natural Language Processing**

Melbourne Business School; Subject Coordinator: A/Prof Jey Han Lau

University of Melbourne

May–July 2025

- Co-ran 2-hr weekly workshops, alternating between conceptual Q&A and applied Python labs.
- Delivered sessions on POS tagging, recurrent and feed-forward neural networks, LSTMs, and PLMs/LLMs.

Academic Tutor (Psychology, Research Methods & Statistics)

Students from 6+ Australian universities

Private Tutoring Service

Mar 2022–July 2025

- Tutored 70+ students across AQF levels 7–9 in psychology subjects, statistics, research projects, and academic writing.
- Advised mainly on research design, thesis preparation, assignments, and statistical analysis.

Sessional Marker, **PSYC90100: Applied Research Methods**

Melbourne School of Psychological Sciences; Coordinator: Prof Nick Haslam

University of Melbourne

Nov 2024

- Marked 40 postgraduate exams under strict deadlines, ensuring consistency and fairness.