

# Naomi Baes

Computational Social Science · Natural Language Processing · Psychology

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## Professional Profile

- Researcher at the intersection of Computational Social Science, Natural Language Processing, and Psychology, developing computational frameworks to model semantic change and uncover its role in social and cultural dynamics.
- 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 leverages 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: regularly contributes to and co-organizes SemEval shared tasks ([BRIGHTER](#), [BLEnD](#)), workshops ([LChange'26](#)), and serves on program committees ([NLP4Democracy](#), [\\*SEM 2025](#)).

## Education

<b>PhD</b>	<b>Doctor of Philosophy in <a href="#">Psychology/Natural Language Processing</a></b> 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 &amp; Stipend)</i>	<b>University of Melbourne</b> Submission: June 2026
<b>GDPA</b>	<b>Graduate Diploma in Psychology (Advanced), First Class Honours</b> Melbourne School of Psychological Sciences <i>Supervisors: Professor Nick Haslam and Dr Ekaterina Vylomova</i> <i>Award: Commonwealth Supported Place</i>	<b>University of Melbourne</b> December 2021
<b>GDP</b>	<b>Graduate Diploma in Psychology, First Class Honours</b> Melbourne School of Psychological Sciences <i>Capstone Supervisor: Professor Charles Kemp</i>	<b>University of Melbourne</b> December 2020
<b>BIDS</b>	<b>Bachelor of International Development Studies, Early Achievers' Status</b> Faculty of Education and Arts	<b>Australian Catholic University</b> December 2014

## Technical Skills

<b>Programming Languages</b>	Python (Pandas, NumPy), R (dplyr, data.table), Bash (Tools)
<b>NLP Tools &amp; Corpus</b>	Hugging Face Transformers, spaCy, NLTK; lemmatization, dependency parsing, collocates
<b>Machine Learning</b>	scikit-learn (classification, clustering, regression), applied use of PyTorch/TensorFlow for PLMs
<b>Statistical Analysis</b>	Correlation, Regression (OLS, GLS, GLM, Mixed-effects, ARDL), ANOVA, <i>t</i> -tests, MDS, PCA
<b>Data Visualisation</b>	ggplot2, Matplotlib, Seaborn, Google Sheets
<b>Infrastructure &amp; Tools</b>	<a href="#">Spartan</a> (HPC system), SLURM, Git, VS Code, Vim, LaTeX, LIWC, TDM Studio (JupyterLab)

## Research Experience (Selected)

<b>Research Internship (On-Site: Sweden) - <a href="#">Change is Key!</a></b> <i>Department of Philosophy, Linguistics, and Theory of Science; Supervisor: Nina Tahmasebi</i>	<b>University of Gothenburg</b> August – September 2025
<ul style="list-style-type: none"><li>• 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).</li><li>• 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.</li></ul>	

- 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

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### 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

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### 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

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### 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.

### 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.