

# Naomi Baes

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## PROFESSIONAL PROFILE

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Ph.D. Candidate in Social Psychology/ Natural Language Processing developing a computational framework to evaluate lexical semantic change using language models on historical text corpora (academic, general) to understand social and cultural dynamics.

## KEY SKILLS

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**Summary** Writing, Natural Language Processing, Data Science (Processing, Statistics, Visualizing)  
**Main Tools** Python (Google Collab, Visual Studio Code), R (R Studio), Bash Tools

## EDUCATION

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<b>Ph.D.</b>	<b>Doctor of Philosophy in Social Psychology/Natural Language Processing</b> Melbourne School of Psychological Sciences, University of Melbourne	Expected March 2027
<b>GDPA</b>	<b>Graduate Diploma in Psychology (Advanced), First Class Honours</b> Melbourne School of Psychological Sciences, University of Melbourne	December 2021
<b>GDP</b>	<b>Graduate Diploma in Psychology, First Class Honours</b> Melbourne School of Psychological Sciences, University of Melbourne	December 2020
<b>Dip.</b>	<b>Diploma of Health Science (Nutrition)</b> Southern School of Natural Therapies, Torrens University Australia	December 2019
<b>BIDS</b>	<b>Bachelor of International Development Studies, Early Achievers' Status</b> Faculty of Education and Arts, Australian Catholic University	December 2014

## HARD SKILLS

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**Programming** Bash (Tools), Python, R  
**Tools** ChatGPT, git, High-Performance Computing (Slurm, Vim), LaTeX, LIWC, NVivo, Qualtrics  
**Statistics** Descriptive, Inferential (PCA, Regression,  $t$ -test), dplyr, Pandas, Scikit-learn (Machine Learning)  
**NLP** Distributional Semantics (word2vec, BERT), Hugging Face (pre-trained transformer LLMs), SpaCy (lemmatization, dependency parsing, pre-trained LM), NLTK (basic text processing)  
**Visualization** ggplot (R package), Matplotlib (Python), Google Sheets

## AWARDS AND GRANTS

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- **Research Training Program Scholarship** July 2023–Dec 2026  
*AUD \$194k, Australian Commonwealth Government*  
Fee offset (University of Melbourne) and annual stipend (indexed)
- **Empirical Methods in Natural Language Processing (EMNLP) Sponsorship** 2023  
*USD \$200, iguanodon.ai*  
EMNLP Conference Registration Fee (partial) and Association for Computational Linguistics Membership Fee
- **Advanced Psychological Theory & Practice Prize** 2020  
*AUD \$100, Melbourne School of Psychological Sciences*  
Top student in the subject
- **Early Achievers' Status** 2012  
*Australian Catholic University*  
Community contribution and leadership potential

## RESEARCH EXPERIENCE

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**Doctoral Researcher:** Melbourne School of Psychological Sciences, University of Melbourne June 2023—June 2026  
*Supervisors: Professor Nick Haslam (primary); Dr Ekaterina Vylomova (secondary)* Melbourne, Australia

- Quantitatively analyze large text corpora: psychology abstracts (1930-2019); general text (1810-2019)
- Propose conceptual multidimensional framework to evaluate dimensions of lexical semantic change drawing on linguistics
- Develop/ use computational models (collocations, BERT, annotated lexica) to evaluate dimensions of concept change
- Statistically analyze time series trends (regression), and how semantic indices relate, to address social and cultural concerns
- Design studies to evaluate and illustrate the generalizability and scalability of the computational linguistic framework
- Publish 2 papers in top conference proceedings (Association of Computational Linguistics) and psychology journals
- Collaborate with researchers locally and internationally to advance work on semantic change in NLP and Psychology

**Research Assistant in Concept Creep:** Melbourne School of Psychological Sciences, University of Melbourne July 2023—  
*Supervisor: Professor Nick Haslam* Melbourne, Australia

- Source/compile new corpora after consulting with experts (academies, New York Times, PubMed)
- Pre-process (clean, lemmatize, dependency parse) diachronic text corpora for further analysis and language modelling
- Extract information (relative frequencies, collocates, adjective modifiers, counts) from corpora with dynamic programming
- Exploratory analysis (multi-dimensional scaling, descriptive statistics) and hypothesis testing (logistic regression analysis)
- Supervize and train RAs: to code binary labels and to compile corpus data (scrape PubMed databases, NYT articles)

**Predoctoral Research Assistant in Concept Creep:** University of Melbourne Jan 2023—Jun 2023  
*Supervisor: Professor Nick Haslam* Melbourne, Australia

- Manage 12 projects independently and with principal investigator (4 to completion; progressed 4; developed 4)
- Program files (Bash, Python) to pre-process, extract and analyze/model corpus data
- Hypothesis testing on big datasets for scientific papers: logistic regression, *t*-tests, analysis of variance
- Develop collaborations with senior academics in the School of Computing and Information Systems

**Research Assistant:** Swinburne Business School, Swinburne University of Technology Oct 2022—Mar 2023  
*Supervisor: Dr Melissa Wheeler* Melbourne, Australia

- Drafted results: Men's Engagement with Flexible Work: Barriers and Facilitators Shaping Fathers' Uptake of Parental Leave, funded by Victorian Government Commission for Gender Equality in Public Sector, to inform government policy
- Coded papers against framework and edited draft within team

**Research Assistant:** Australian Leadership Index, Swinburne University of Technology Aug 2022—Mar 2023  
*Supervisor: A/Prof. Samuel Wilson, Dr. Vlad Demsar, Dr. Melissa Wheeler* Melbourne, Australia

- Advance project in research team by researching literature to find gap, optimal method and coding quantitative analysis
- Manage preprocessing and statistical analysis for national longitudinal data set reflecting opinions of Australian population
- Quantitatively extract themes in corpus data (PCA in R) and co-draft paper, leading to publication in Tier 1 journal

**Research Assistant:** Computational Cognitive Sciences Lab, University of Melbourne Jan 2021—Jan 2023  
*Supervisor: Professor Charles Kemp* Melbourne, Australia

- Build linguistic data set by scanning grammars for patterns in how 38 languages mark word forms for word meanings
- Liaise with researchers across time zones (CET, GMT, and AEDT) to compile grammatical number data for modelling
- Compile cultural astronomy database detailing different meanings cultures give to sky objects (e.g., galaxies, nebulae)

**Psychology Capstone Project:** Melbourne School of Psychological Sciences, University of Melbourne Jun 2021—Nov 2021  
*Supervisor: Professor Charles Kemp* Melbourne, Australia

- Investigate if rainfall amount in language location predicts more rain-related vocabulary in dictionaries of local language
- Link dictionary data (word counts, 248 languages) with geographic coordinates for languages with global rainfall data
- Mixed effects logistic regression models: precipitation predicts probability of rain-related noun occurrence in dictionaries

**Research Intern/Honours/Affiliated Researcher:** Social/Personality Laboratory, University of Melbourne 2021—2022  
*Supervisor: Professor Nick Haslam, Dr Ekaterina Vylomova* Melbourne, Australia

- Led project within team of 3, analyzed sentiment of psychology corpus data, co-drafted manuscript, resulting in publication
- Developed method to evaluate semantic severity of concepts using emotion ratings & collocate counts for honours thesis
- Programmed code for Honours student and guided them to compute indices, graph and quantify results, for thesis project

## TEACHING EXPERIENCE

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**Tutoring Natural Language Processing:** Melbourne School of Psychological Science, University of Melbourne March 2025

- Tutor 80 students

**Sessional Marking:** Melbourne School of Psychological Science, University of Melbourne November 2024

- Mark 40 exams (short answer questions) for Applied Research Methods (PSYC90100) for Masters of Applied Psychology.

**Academic Tutor:** Private Tutoring Service, Self-Employed Mar 2022—

- Provide tutoring services to > 70 university students (87% University of Melbourne)<sup>1</sup> across 28 psychology subjects (higher education AQF levels 7-9) in confidential setting, securing positive reviews [see here]
- Consult on entry into academic programs, research design and statistical analysis, time management and proofread/provided feedback on assessments (1,500 word lab reports; up to 10,000 word theses)

**Music Teacher:** Private Studio, Self-Employed/uLearn Music, City of Casey Jan 2010—Jan 2017

- Teach classic music (theory and practice: AMEB piano syllabus, Suzuki violin method) with 98% retention rate
- Hold practice recitals and increased student base with an individualized teaching approach
- Engage primary-school children by adapting curriculum in private, semi-private (dyad), and group lessons
- Prepare over 30 students for school concerts by selecting pieces and coaching students in technique and performance.

## PUBLICATIONS

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**Summary [as of 30/01/2025]:**

- Number of published papers: 12 (A\* [core ranking] computing conference papers = 1)
- Number of abstracts: 1
- Popular Press Articles: 3
- Google Scholar citation count: 127
- Google Scholar *h*-index: 5

**Journal Publications [See Google Scholar Profile for all publications]:**

### First Author Publications

**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]

**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]

**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]

**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]

### Last Author Publications

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]

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]

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]

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]

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<sup>1</sup>Australian National University, Institute for Social Neuroscience, Monash University, Swinburne University, University of Adelaide, University of Canberra

## Middle Author Publications

- 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]
- 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]
- 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]
- 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]

## Journal Papers in Review:

- Baes, N.**, Haslam, N., Merx, R., Vylomova, E., Dubossarsky, D. (in prep.). Evaluating Methods to Estimate Dimensions of Lexical Semantic Change: Insights from LLM-Generated Synthetic Data. *Association for Computational Linguistics*.
- 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., et al. (2025). BRIGHTER: BRIdging the Gap in Human-Annotated Textual Emotion Recognition Datasets for 28 Languages. *ACL*, XX, XX. [link]
- Kashima, Y., Vylomova, E., Haslam, N., Hamamura, T., **Baes, N.** (2024). Culture in Psychology: A Cultural Dynamical Analysis. *Personality and Social Psychology Review*, XX, XX. [link]
- Wheeler, A. M., Fine, C., Sojo V. E., Arthur, C. A. L., **Baes, N.** and Ryan, M. (in prep). 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*, XX, XX. [link]

## Manuscripts in Preparation:

- Periti, F., Cassotti, P., Camboim De Sa, J., **Baes, N.**, Dubossarsky, D., Geeraerts, D. (in prep.). Modeling Lexical Semantic Change: Classification and Characterization. *Computational Linguistics*.
- Baes, N.**, Haslam, N., Frermann, L., Vylomova, E., (in prep.). The Evolution of Gender Stereotype Content in American Text from 1930-2019. *JOURNAL*.
- Baes, N.**, Weaving, M., Haslam, (in prep.). The Tightness-Looseness of Gender in American Text. *JOURNAL*.
- Pourliakas, A., Dong, P., **Baes, N.**, Krug, I., Kiropoulos, L. (in prep.). Psychological Correlates and Psychological Treatments of Death Anxiety in Multiple Sclerosis: A Systematic Review. *JOURNAL*.

## POPULAR PRESS

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- Haslam, N. & **Baes, N.** (2024, April 9). What Should We Call Mental Ill-Health? *The Conversation*. Retrieved from [link]
- Wheeler, M. A., Wilson, S. **Baes, N.**, Demsar, V. (2024, January 23). What does the ‘common good’ actually mean? Our research found common ground across the political divide. *The Conversation*. Retrieved from [link]
- Baes, N.** (2023, June 20). The proliferation of trauma online, Medium. Retrieved from [link]
- Haslam, N., **Baes, N.**, Vylomova, E., & Xiao, Y. (2023, July 5). Do we think about anxiety and depression differently now? *PURSUIT*. Retrieved from [link]

## In the Press: [MuckRack Profile]

- Stock, P. (2023, November 6). In the Academy of Science, are some sciences more equal than others? *Cosmos, Society*. Retrieved from [link]
- Stock, P. (2023, November 11). Policy advice benefits from diverse research. *Cosmos, Society*. Retrieved from [link]
- Stock, P. (2023, July 9). Tracking the shift in meanings of ‘anxiety’ and ‘depression’ over time. *Cosmos, Social Sciences*. Retrieved from [link]

## PROFESSIONAL DEVELOPMENT ACTIVITIES

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### Technical Skill Development:

- **COMP90042: Natural Language Processing** (12-week), Audited a Graduate level course on main algorithms used for processing text, University of Melbourne, Parkville, School of Computing and Information Systems

- **COMP10001: Foundations of Computing** (12-week), Audited a first-year course on syntax of Python Programming, University of Melbourne, Parkville, School of Computing and Information Systems
- **COMP90049: Introduction to Machine Learning** (12-week), Audited a Graduate level course on machine learning fundamentals, University of Melbourne, Parkville, School of Computing and Information Systems
- **High Performance Computing, 8-hour Workshops**, University of Melbourne, Parkville, Research Computing Services
  - Introduction to Linux and HPC: Job Submission Approaches
  - Advanced Linux and Shell Scripting for HPC
  - Parallel and High Performance Python: Parallel Programming (Single- and Multi-Node), Performance Improvements

#### **Summer Schools/Workshops:**

- **35th European Summer School in Logic, Language and Information (ESSLLI)**  
*Date:* 29 July - 9 August 2024; *Location:* KU Leuven, Leuven, Belgium  
*Details, and Teaching Staff:* Programme Link
- **Computational Models for Semantic Change and their Applications in Multidisciplinary Research, Change is Key!, Associated with ESSLLI**  
*Date:* 29 July — 2 August 2024; *Location:* KU Leuven, Leuven, Belgium  
*Teaching Staff:* A/Prof Haim Dubossarsky, Dr Pierluigi Cassotti  
*Details:* Event Link
- **4th International Workshop on Computational Approaches to Historical Language Change, Associated with Empirical Methods in Natural Language Processing (EMNLP)**  
*Date:* 6 December 2023; *Location:* Resorts World Convention Centre, Sentosa, Singapore  
*Details, and Presenters:* Event Link
- **How Evolution Shaped the Social Mind: A Crash Course for the Fledgling Social Psychologist, Associated with the Society of Australasian Social Psychologists Summer School (SASP)**  
*Date:* 27-30 November 2023; *Location:* St Hilda's College, The University of Melbourne, Parkville - Melbourne, Australia  
*Teaching Staff:* Dr Khandis Blake, Dr Amanda Rotella, Dr Beatrice Alba  
*Details:* Event Link
- **Research in the Mainstream Media Workshop** (180 min), Australian Science Media Centre 2023  
*Date:* October, 2023; *Location:* The University of Melbourne, Parkville - Melbourne, Australia

#### **Academic Conferences:**

- **Google Australia Research@Sydney Student Event**  
*Role:* PhD Student Attendee  
*Date:* 18 February 2025; *Location:* Google Sydney – One Darling Island Rd, Pyrmont NSW 2009, Australia; *Details:* Link
- **The 62nd Annual Meeting of the Association for Computational Linguistics**  
*Role:* Poster Session Presenter and Conference Attendee  
*Date:* August 11–16, 2024; *Location:* Centara Grand Convention Center, Bangkok, Thailand; *Details:* Event Link
- **The 2023 Conference on Empirical Methods in Natural Language Processing**  
*Role:* Workshop Presenter and Conference Attendee  
*Date:* 6–10 December 2023; *Location:* Resorts World Convention Centre, Sentosa, Singapore; *Details:* Event Link
- **The Society for Australasian Social Psychologists (SASP) and the Australasian Congress on Personality and Individual Differences (SASP-ACPID) 2023 Conference**  
*Role:* Presenter and Conference Attendee  
*Date:* 23-26 November 2023; *Location:* Peppers Noosa Resort Conference, Noosa, Queensland, Australia; *Details:* Link
- **Australian Institute of International Affairs National Conference - Foreign Policy for a Top 20 Nation**  
*Role:* Student attendee at related “Aid and Development Masterclass Program” (Dr Janet Hunt) and National Conference  
*Date:* 26-27 October, 2014; *Location:* Hyatt Hotel, Canberra, Australia; *Details:* Outcomes Report

#### **PROFESSIONAL SERVICE**

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##### **Positions:**

- Program Committee for Workshop on NLP for Deliberation and Democracy (NLP4Democracy) - NAACL 2025 Workshop

***Reviewing Journal Articles:***

- 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

***Professional Memberships:***

- Association for the Advancement of Artificial Intelligence: Washington, DC, US 2025–
- Association for Computational Linguistics: Stroudsburg, Pennsylvania, US 2023–
- Society of Australasian Social Psychologists: Sydney, AU 2023–