

## Leveraging recent NLP techniques for the study of child language acquisition

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In our group, we use state-of-the-art machine learning on multimodal child-caregiver conversations to study various aspects of language acquisition. This project is focusing on one specific phenomenon of communication: Backchannel (BC) responses. In conversations, BCs are short non-intrusive responses (“uh-huh”, “yeah”) that signal attention and/or understanding from the listener's side. In that way, they form a crucial component for achieving mutual understanding of the interlocutors.

Recently, we proposed that BCs have an important role as feedback signals for children learning language (Nikolaus & Fourtassi 2023). In order to test this hypothesis on a larger scale, this project aims to build models for the automatic detection of BCs in child-caregiver conversations.

We will work with a large open source database of transcribed child-caregiver interactions ([CHILDES](#)). A first simple detection mechanism could rely on the textual transcriptions of the conversations. However, some BC responses are missing from the transcriptions and others are not transcribed in a consistent way. Therefore, it will be crucial to work with the original audio files of the conversations and leverage more recent speech processing methods to detect BCs from the raw audio. We will develop and compare a range of machine learning models for this task, starting with simple clustering and classification models up to deep learning.

We will use either unsupervised learning (e.g., Liesenfeld & Dingemanse 2022), supervised learning (e.g., Stolcke et al. 2000), or a combination of the two approaches.

The student will therefore gain hands-on experience on developing and evaluating machine learning algorithms on a real-world application, that will help us to shed light on important questions of child language learning in social contexts.

The internship is fully funded within the scope of [MACOMIC](#). The students can define their own contribution to the project (in agreement with the supervisors) depending on their skills and interests. They can collaborate with other students and researchers in the interdisciplinary research group CoCoDev ([cocodev.fr](#)). Candidates should contact Mitja Nikolaus ([mitja.nikolaus@univ-amu.fr](mailto:mitja.nikolaus@univ-amu.fr)) and Abdellah Fourtassi ([abdellah.fourtassi@univ-amu.fr](mailto:abdellah.fourtassi@univ-amu.fr)) for more information about the internship.

### References

Nikolaus, M., & Fourtassi, A. (2023). Communicative Feedback in Language Acquisition. New Ideas in Psychology. <https://psyarxiv.com/k63uv/>

Liesenfeld, A., & Dingemanse, M. (2022). Bottom-up discovery of structure and variation in response tokens ('backchannels') across diverse languages. Proceedings of Interspeech. <https://doi.org/10.31234/osf.io/w8hpy>

Stolcke, A., Ries, K., Coccaro, N., Shriberg, E., Bates, R., Jurafsky, D., Taylor, P., Martin, R., Ess-Dykema, C. V., & Meteer, M. (2000). Dialogue Act Modeling for Automatic Tagging and Recognition of Conversational Speech. Computational Linguistics, 26(3), 339–373. <https://doi.org/10.1162/089120100561737>