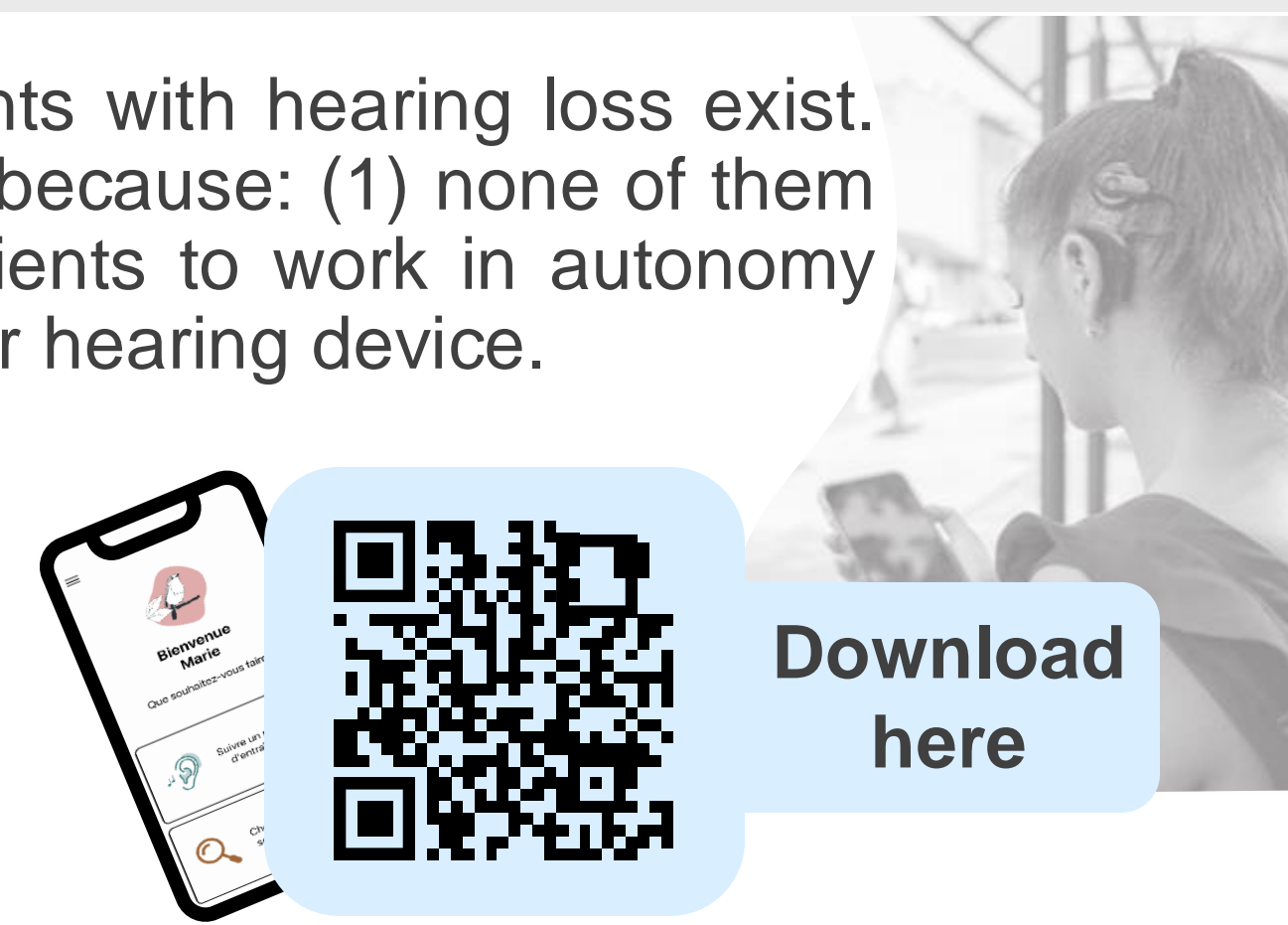


## Abstract

Nowadays, some mobile applications for auditory training for patients with hearing loss exist. However, none of them is adapted to the population in our center, because: (1) none of them is available in French; (2) the conception level does not allow patients to work in autonomy from home; (3) the sound output cannot be directly streamed via their hearing device.

For these reasons, we developed **AudioRehab+**, a multi-platform (Android, iOS, web) mobile application specifically designed for auditory training in French.



## Aim

AudioRehab+ was designed to help teenagers and adults fitted with hearing aids or/and cochlear implants. It was created in order to complete speech therapy sessions and facilitate access to auditory rehabilitation.

## Methods

AudioRehab+ was designed by our team of speech therapists in collaboration with patients, IT engineers, designers, and researchers, applying a **user-centered approach (1)**. The main design steps are described below:

### Analysis and conception

2021

- Collecting data related to the **patients' needs/expectations**
- **Brainstorming and design workshops** to define training contents, organization of exercises, navigation...
- **Designing wireframe and prototype** (accessibility and ease of use)

### Prototype and development

2022

- **Iterative process** with an IT team to build the app:  
Design → Evaluation → Redesign
- **Audio recording**: + 5'000 audio files

### Evaluation

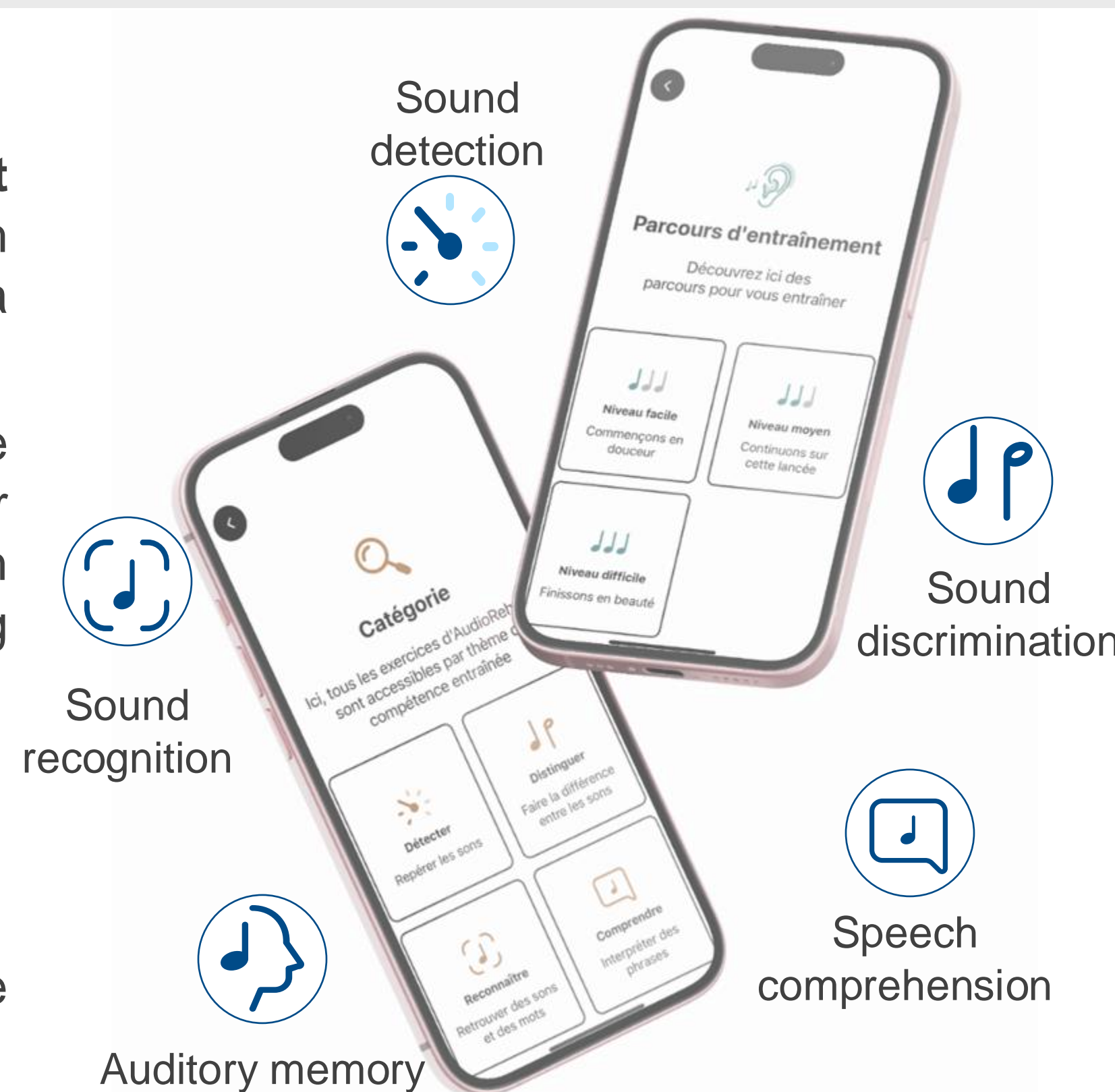
2023

- **Usability testing** in a laboratory setting
- **Acceptance questionnaire** completed by patients before and after use (still on-going)

## Results

AudioRehab+ includes :

- **+ 150 interactive exercises to practice five distinct auditory abilities** required for speech comprehension, combining both a bottom-up and a top-down approach
- **Two training modes** : The patient can either choose from the menu the skill she/he wants to train, or she/he can follow a specific progressive path designed by speech therapists with increasing difficulty.
- **Multiple speakers**: Male, female, children
- **Three levels of difficulty**
- Usability testing revealed **positive feedback** from the patients



## Conclusion

- Patients' feedback was very positive. **AudioRehab+ is innovative** by its large variety of exercises and recordings, its expert-based creation, and its user-centered design approach.
- The possibility to connect the hearing device directly to their personal device is a big advantage to grant ideal conditions of training in every-day settings, especially for patients with single-sided-deafness.
- The next step for *AudioRehab+* would be to provide both the patient and the specialists with a follow-up of the results, exercise by exercise, to personalize rehabilitation therapy efforts.

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(1) In user-centered design (UCD) designers focus on the users and their needs: users are involved throughout the design process to create highly usable and accessible products.