

# DEVELOPMENT OF A PATIENT-FRIENDLY HEARING CARE APP THAT USES ECOLOGICAL MOMENTARY ASSESSMENT

## ORGANIZATION

The Hearing and Speech Center at the ENT department at the Erasmus Medical Center in Rotterdam. <https://www.erasmusmc.nl/nl-nl/patientenzorg/centra/gehoor--en-spraakcentrum-volv>

## THE PROJECT

In a Hearing and Speech Center audiologists make use of audiological assessments to gain insight into a patients' hearing functions and ability to understand speech in quiet. Furthermore, they make use of patient-reported outcome measures based on questionnaires at the beginning and end of the hearing treatment to evaluate the self-perceived hearing loss in different situations before and after treatment. These questionnaires are filled in retrospectively and require the patient to recall and generalize their experience of listening situations. Recall bias is an inherent risk in this task<sup>1</sup>. Another limitation of these questionnaires is that the listening situations addressed may differ from the everyday environment of the patient.

To overcome these shortcomings, the field of hearing research has started to adopt the use of ecological momentary assessment (EMA). EMA is a method that involves repeated sampling to capture data about experiences in real-time, in a participants' natural environment<sup>2</sup>. Currently, this method is often employed using smartphones, where a participant receives one or multiple small questionnaires a day. For audiology, these questions are about their state of hearing and communication and the related listening and acoustic environment<sup>3</sup>. Besides the use of EMA, a smartphone application may offer other possibilities that could be of use in clinical audiology, like sharing photos that show important listening situations<sup>4</sup> or providing education in coping with the situation of that moment.

Although the benefits of EMA and the other options have been shown in hearing research, multiple questions regarding the implementation, feasibility, and usability in clinical practice remain. For example, how an application for EMA can be designed in such a way that it is well adapted to use by patients. The aim of this project is therefore to design a smartphone application for audiology clinical practice, including EMA and other relevant options for hearing rehabilitation and make a start to improve hearing care.

## THE ASSIGNMENT

A possible approach would be to investigate the patient support for this tool, do a literature and market study, design a patient and clinician interface, and perform a pilot study.

This project can start from March 2021 onwards and is suitable for master students that are motivated by this topic, speak Dutch fluently and like to work together with health care professionals and patients. We will provide the necessary contacts and our effort and time to make this a successful and fun project! For more information, please contact Marloes

Adank, [m.l.adank@erasmusmc.nl](mailto:m.l.adank@erasmusmc.nl).

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<sup>1</sup> Moskowitz, D. S., & Young, S. N. (2006). Ecological momentary assessment: what it is and why it is a method of the future in clinical psychopharmacology. *Journal of Psychiatry and Neuroscience*, 31(1), 13.

<sup>2</sup> Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annu. Rev. Clin. Psychol.*, 4, 1-32.

<sup>3</sup> Timmer, B. H., Hickson, L., & Launer, S. (2018). The use of ecological momentary assessment in hearing research and future clinical applications. *Hearing research*, 369, 24-28.

<sup>4</sup> Saunders, G. H., Dillard, L. K., Frederick, M. T., & Silverman, S. C. (2019). Examining the Utility of Photovoice as an Audiological Counseling Tool. *Journal of the American Academy of Audiology*, 30(5), 406-416.