HEAR-ECO Innovative Hearing Aid Research - Ecological Conditions and Outcome Measures

Berichterstattung

Projektinformationen

HEAR-ECO

ID Finanzhilfevereinbarung: 765329

Projektwebsite

DOI
10.3030/765329

Projekt abgeschlossen

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EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

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Koordiniert durch
STICHTING AMSTERDAM UMC
Netherlands

Periodic Reporting for period 2 - HEAR-ECO (HEAR-ECO Innovative Hearing Aid Research - Ecological Conditions and Outcome Measures)

Berichtszeitraum: 2019-12-01 bis 2021-11-30

Zusammenfassung vom Kontext und den Gesamtzielen des Projekts

In today's aging European population, hearing impairment is an increasing concern for public health and social participation, affecting one in three older adults. The H2020 EC Marie-Curie ITN project "Innovative Hearing Aid Research – Ecological Conditions and Outcome Measures" (HEAR-ECO765329) addresses this concern by developing and combining new tools and outcome measures for realistic communication, and translating these tools into innovative developments and evaluations of new technology for those with hearing loss. At its core, HEAR-ECO will train a new team of researchers working at the nexus of technology, psychology, physiology and audiology.

The PhD students will work together to creatively combine three established measures of listening effort, and to develop innovative conditions for testing hearing aids. Moreover, this research will develop bold new tests, analyses techniques, and technologies that will create more realistic listening conditions.

HEAR-ECO will assess how task demands, motivation, and invested effort modulate speech understanding and hearing-aid benefit in daily life.

Please see also www.hear-eco.eu

Arbeit, die ab Beginn des Projekts bis zum Ende des durch den Bericht erfassten Berichtszeitraums geleistet wurde, und die wichtigsten bis dahin erzielten Ergebnisse

In June and July 2018, each of the six ESRs were recruited and started their training and research activities. The scientific work performed in this period focused on the development of study protocols, data collection and analysis of the groundwork performed by each of the 6 ESRs. Furthermore, this period covers the transition from that groundwork to collaborative work in the combination studies with the exchange of knowledge, techniques, and procedures (WP4). Each of the ESRs have received training covering academic research skills, transferrable skills, and innovation and entrepreneurship training. Besides the individual training, the ESRs all attended the two network-wide HEARTRAIN events organized respectively by the coordinator VUmc in Amsterdam, The Netherlands (August 2018) and by the private partner Oticon A/S in Snekkersten, Denmark (September 2019). The main results include the evaluation of new analysis techniques for pupillometry measures of listening effort, the novel application of cardiovascular measures in speech perception research, combined with new methods to induce social effects in speech perception research. Furthermore, the results include new ways to induce and assess motivation and fatigue-related effects on listening effort and performance during speech perception. Also, EEG data (a third physiological measure of listening effort) suggest that it is sensitive to reward (motivation) in a sentence perception task. Finally, ways to adapt the acoustic specifications of the listening tests, stimuli, and environments in order to increase the ecological validity of the stimuli were investigated.

Fortschritte, die über den aktuellen Stand der Technik hinausgehen und voraussichtliche potenzielle Auswirkungen

(einschließlich der bis dato erzielten sozioökonomischen Auswirkungen und weiter gefassten gesellschaftlichen Auswirkungen des Projekts)

We aim to develop ecologically valid listening tests that include realistic acoustic conditions and social factors that contribute to speech perception difficulties. Also, we will identify the acoustical characteristics of daily-life listening conditions and simulate these in the lab or even in virtual reality applications. We will further develop, validate and combine relevant physiological outcome measures of listening effort in individuals. These are pupillometry, cardiovascular measures and EEG. We will test the influence of listening conditions, hearing aids processing, individual characteristics and social factors on the outcomes. By combining all these elements at the end of the project, this project contributes to the development of validated and innovative tools that enable the development and evaluation of hearing rehabilitation solutions that provide most listening effort benefit next to the best listening performances. In the long term, this will increase the successful use of these rehabilitation devices, and improve communication by listeners with hearing difficulties.

Logo HEAR-ECO

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