ERIK WITTE is a Swedish registered audiologist (2013) and Master of Audiology (2014). He has worked clinically with audiological rehabilitation in Region Västra Götaland. Since 2015, he has been a teacher at the audiologist program at Örebro University as well as a doctoral student at Örebro University, Sweden. His doctoral-level studies have been organized within the Swedish Institute for Disability Research and his research has been conducted at the Audiological Research Centre at Örebro University Hospital, Region Örebro County. Erik has previously studied nursing science, linguistics and holds a bachelor’s degree in Theology (2010).

In the current thesis, a Swedish speech-audiometry test in natural background noise has been developed. The test is called the Situated Phoneme (SiP) test as it tests phonemic discrimination ability situated in natural sound environments. The development of the SiP-test has involved the creation of a Swedish psycholinguistic database – the AFC-list – which was utilized to select appropriate test words with controlled values of word frequency, phonological neighborhood density, phonotactic probability and orthographic transparency. In order to validate the accuracy of male- and female-voice recordings of the selected test words, they were presented in a listening experiment to 28 normal-hearing adult native speakers of Swedish. The background sounds for the SiP-test were taken from an urban outdoor environment and were matched in spectral content to the phonemes contrasted in the SiP-test closed-set discrimination task. In a second listening experiment, the SiP-test was presented at several different difficulty levels to 74 people with normal hearing to severe hearing loss. Based on the resulting data, a computational prediction model for the SiP-test was developed, along with analyses of learning effects, test-retest reliability as well as content-, construct- and criterion validity. As one major purpose of the SiP-test is to provide an evaluation tool for benefits from hearing-rehabilitation interventions, the thesis also investigated the validity of several different statistical methods that can be used when comparing SiP-test scores from different conditions or situations.