

## University of Groningen

### Listening Effort

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# STELLINGEN

behorende bij het proefschrift

## LISTENING EFFORT

The hidden costs and benefits of cochlear implants

van Carina Pals

verdedigd op 26 oktober 2016 aan de Rijksuniversiteit Groningen

1. “Listening effort” is the result of a listener’s efforts to understand speech when facing challenging listening conditions.
2. Only in challenging listening situations does it become apparent what knowledge and which cognitive processes are used to help interpret speech.
3. Speech understanding with a cochlear implant can be considered ‘challenging’ compared to normal hearing, as the information contained in the signal is not as rich and redundant as that provided by acoustic hearing.
4. Optimal speech understanding does not imply optimal listening effort, and vice versa.
5. Listening effort depends not only on the quality of the speech signal and contextual information available to the listener; it also depends on the listener’s cognitive ability.
6. Improved speech signal quality can improve listening effort; for implant users, both increased spectral resolution and the added acoustic signal as provided by a hearing aid or hybrid cochlear implant can thus improve listening effort.
7. The KISS (keep it simple, stupid) principle applies to measuring listening effort as well: the simpler methods appear to work just as well.
8. “Progress is made by trial and failure; the failures are generally a hundred times more numerous than the successes; yet they are usually left unchronicled.” — William Ramsay, 1852 to 1916
9. “Imagination is more important than knowledge.” — Albert Einstein, 1979 to 1955