

**THE USE OF VARIOUS TELEPHONES BY INDIVIDUALS  
FITTED WITH A COCHLEAR IMPLANT**

*By*

**Louise Hönck**

*Submitted in partial fulfilment of the requirements for the degree of  
M.Communication Pathology*

**Department of Communication Pathology**

Faculty of Humanities

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Dedicated to Gerhard, Cecilia and Bea Hildebrand who taught me much more of individuals with a cochlear implant than any book or article ever could.....

## ACKNOWLEDGEMENTS

“Now to Him who is able to do exceedingly abundantly above all that we ask or think, according to the power that works in us, to Him be glory in the church by Christ Jesus to all generations, forever and ever” Eph. 3:20-21

I would like to express my appreciation to the following persons for contributing to this research study:

- ❖ My *Saviour*, **Jesus Christ** for locking some doors and unlocking others. You gave me the strength, ability and resources I needed to complete this study!
- ❖ **Mrs Venter** (*Department Communication Pathology, University of Pretoria*), my supervisor for her professional and patient guidance, which inspired and motivated me during the execution and completion of the study.
- ❖ **Dr Soer** (*Department Communication Pathology, University of Pretoria*), my co-supervisor for her valuable input and efficient guidance.
- ❖ **Simon Melville** (*Senior Clinical Specialist-Cochlear Europe Ltd.*) and **Sharon Novy** (*Education Officer-Cochlear UK*) for their valuable input, time, advice and direction regarding the methodology and literature study.
- ❖ **Prof Groeneveld en Dr van der Linde** (*Department of Statistics, University of Pretoria*) for the statistical processing and analysing of the data.
- ❖ All the **participants** and the **communicators** who presented various voice-types, a sincere word of appreciation for your time and friendly helpfulness.
- ❖ My **father** – Chris, for precious hours of forever, endless, analytical language editing and his moral support and motivation throughout the study. This study is as much yours as it is mine!
- ❖ My **mother** – Frouwien, for her interest, support and inspiration throughout the study.
- ❖ **Lindsay** for all the crosschecks, scientific words and (awkward!!!) language editing!
- ❖ **Adri, Almari, Chantel, Coralie, Danie, Evelyn, Minette, Nandie, Nicky, Paula and Theo, Wally** for emotional and spiritual support and every footprint you left in my heart!
- ❖ **Barend** – who challenged my mind and encouraged me to challenge the odds! Your support means so much!

## Summary

<b>TITLE</b>	<b>The use of various telephones by individuals fitted with a cochlear implant</b>
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The aim of this study was to determine which landline telephone and/or mobile/cellular telephone will enable an individual with a cochlear implant to achieve the best speech discrimination scores. Objective measurements and the subjective experience of the individual were used. The literature review provided an overview on the telephone abilities of individuals fitted with cochlear implants. In this study three factors, the quality of the telephone, the speaker's voice and different speech-coding strategies, were discussed and examined, in order to explore and explain the technical difficulties commonly experienced by this population regarding the successful use of a telephone. Data regarding various telephones and the influence different voice-types has on the telecommunication abilities were obtained through the execution of the methodology. Telephone abilities on five different telephones were assessed. Ten participants, four

females and six males, fitted with the ESPrIt 22, ESPrIt 24 and ESPrIt 3G – Nucleus cochlear implants were used. The Central Institute for the Deaf (CID) open-set sentences were used and data was statistically analysed using a split-plot design. Significant differences between different types of telephones were found. The results also suggested that different voice types have an impact on these individual's ability to use a telephone independently. Possible reasons such as different coding strategies, technical interference and quality of voices were discussed. Recommendations for developing rehabilitation programs, to obtain successful telephone competence for these individuals, were made and discussed. The study aimed to empower technologists working in this field to actively take note of the need for development and continuous research regarding various telephones. These telephones should enable more individuals fitted with cochlear implants to receive the maximum speech discrimination with the minimum interference. The findings of this study should encourage future research regarding this topic. A more extensive range of telephones should be used and compared to the findings in this study.

**List of keywords:** CID open-set sentence, Cochlear Implant, Electro-magnetic interference, Landline compatible telephones, Mobile/cellular telephones, Objective speech discrimination scores, Speech coding strategy, Subjective experience, Telecoil, Types of telephones, Voice quality.

## Opsomming

<b>TITEL</b>	<b>Die gebruik van verskillende telefone deur individue wat gepas is met 'n kogleêre inplanting.</b>
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<b>STUDIE LEIER</b>	<b>Mev Venter</b>
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<b>GRAAD</b>	<b>M. Kommunikasiepatologie</b>

Die doel van die studie was om te bepaal met watter landlyn telefoon en/of mobile/sellulêre telefoon 'n individu met 'n kogleêre inplanting die beste spraak diskriminasie telling sal kry. Daar is van objektiewe metings en subjektiewe ondervinding van die individue gebruik gemaak. Die literatuur studie het 'n breë oorsig gegee oor die telefoon vermoëns van hierdie individue. Drie relevante faktore, die kwaliteit van die telefoon, die spreker se stem en verskillende spraak-kodering strategieë, wat die tegniese probleme rakende telefoon gebruik by hierdie populasie beskryf is beredenerend bespreek. Data rakende verskillende telefone en die invloed van verskillende stemtipes is verkry deur die uitvoering van die metodiek. Telefoon vermoëns is getoets met vyf verskillende telefone. Duie tien proefpersone in die studie, vier vroulik en ses manlik was almal gepas met ESPrit 22, ESPrit 24 and ESPrit 3G – Nucleus kogleêre inplantings. Die CID

oopstel sinne is gebruik en data is statisties geanaliseer deur gebruik te maak van 'n split-plot ontwerp. Beduidende verskille tussen verskillende telefone is gevind. In die resultate is verder bevind dat verskillende stemtipes 'n impak op hierdie individue se vermoëns het om die telefoon onafhanklik te gebruik. Moontlike redes soos verskillende spraak gekodeerde strategieë, tegniese verskille en stemkwaliteit is bespreek. Aanbevelings vir die ontwikkeling van rehabilitasie programme, ten einde suksesvolle telefoon gebruik vir hierdie individue te kry, is gemaak en bespreek. Hierdie studie het gepoog om tegnisi werksaam in die betrokke veld aan te moedig om kennis te neem van die behoefte vir die ontwikkeling, en deurlopende navorsing aangaande verskillende telefone. Hierdie telefone sal meer individue met 'n kogleêre inplanting in staat moet stel om die maksimum spraak diskriminasie met die minimum inmenging te verkry. Die bevindinge van die navorsing studie moet toekomstige navorsing rakende die onderwerp aan moedig. Meer uitgebreide reeks telefone kan getoets en vergelyk word met bevindings van hierdie studie

**Lys van sleutelwoorde:** CID oop-stel sinne, Kogleêre inplanting, Elektromagnetiese inmenging, Landlyne telefone, Mobile/sellulêre telefone, Objektiewe spraak diskriminasie telling, Spraak kodering strategieë, Subjektiewe ondervinding, Telecoil, Tipe telefone, Stemkwaliteit.



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