

## Nederlandse Vereniging voor Audiologie

### Wintervergadering 2006

Vrijdag 27 januari 2006

#### Reading skills of deaf children with cochlear implants

A.M. Vermeulen<sup>1</sup>, W.H.J. van Bon<sup>2</sup>, A.F.M. Snik<sup>3</sup>, H.E.T. Knoors<sup>4</sup> & R. Schreuder<sup>1</sup>

[Anneke.Vermeulen@mpi.nl](mailto:Anneke.Vermeulen@mpi.nl)

<sup>1</sup>*Cochlear Implant Centre Nijmegen – Sint Michielsgestel*

<sup>2</sup>*Dept. of Special Education, Radboud University Nijmegen*

<sup>3</sup>*Audiological Centre, University Hospital Nijmegen & CIC Nijmegen – Sint Michielsgestel*

<sup>4</sup>*Diagnostic Centre Viaaal & Dept of Special Education, Radboud University Nijmegen*

<sup>5</sup>*Interfaculty Research Unit for Language and Speech, Radboud University Nijmegen*

As part of a study of the effect of cochlear implantation on literacy of deaf children, reading skills of 50 children with cochlear implants were studied. The children are in the clinical program of Cochlear Implant Centre Nijmegen-St Michielsgestel.

Reading skills of Dutch deaf children with conventional hearing aids were recently found to be shockingly low, (Wauters 2004). According to 'The Simple View of Reading' model reading comprehension is the product of decoding and language comprehension. In our current research reading comprehension and decoding skills of deaf children with CI were assessed and compared with those of deaf children with conventional hearing aids (CHA) and of hearing (H) children. Furthermore the comparative effect of visual word recognition skills on reading comprehension was studied. Reading comprehension was tested using the Begrijpend Leestoets (Aarnoutse) and visual word recognition skills were tested using lexical-decision tasks. Analyses were carried out for four educational grade-levels, (grades 1 up to and including 3, grades 4-6, grades 7-9, and grades  $\geq 10$ ). Non-parametric testing showed significant better reading comprehension skills for the CI group compared to the CHA group for each of the four grade-levels.

Non-parametric tests showed significant differences between the distributions of the visual word recognition scores of the H and the CHA groups on all grade-levels. No differences were found between the CI and the CHA groups, and the CI and H groups. A trend analysis of the effect of 'experimental group', with polynomial contrasts over the grade-levels, showed significant differences in the development of the CHA and H groups as well. Again no differences were found between the CI and CHA, and CI and H group.

An ANOVA showed significant effects of the factors 'experimental group' and 'grade-level' on reading comprehension for the total group. No interaction effect of these factors was found. A subsequent ANCOVA, with 'visual word recognition' as a covariate, showed that the significant effects of the factors 'experimental group' and 'grade level' on reading comprehension, remained.

This study demonstrates that reading skills of deaf children with cochlear implants differ from those of children with conventional hearing aids. The factors 'experimental group' and 'grade-level' do have significant effects on reading comprehension. When variance due to 'visual word recognition' is removed, these effects on reading comprehension remain significant.

This finding implicates that the difference between the reading comprehension abilities of children with CI and CHA is not explained by differences in visual word recognition skills only. The role of language comprehension skills is now studied in more detail.