INTRODUCTION

Children with profound hearing loss demonstrate marked improvements in their speech perception following cochlear implantation. This study compared the auditory-alone and audiovisual speech perception of children with cochlear implants to that of children with normal hearing. To achieve this, the relationship between auditory-alone and audiovisual speech perception was examined in 9 children with cochlear implants and 4 children with normal hearing. The children were matched on age, sex, and degree of hearing loss. The study aimed to investigate the role of working memory in children using a cochlear implant and children with normal hearing.

METHOD

Participants

The Cochlear Implant Group consisted of 16 children who acquired a profound hearing loss prior to the age of 3 and received a cochlear implant at an average age of 1 year (SD = 1 year, 6 months), and the mean WISC-III Performance IQ was 114 (SD = 11). The Control Group consisted of 4 children with normal hearing who were matched peers with normal hearing.

Stimuli

The same stimuli were used at Time 1 and 2.

Auditory stimuli

The children used a matched cochlear implant and air-conduction system to process auditory speech signals. The stimuli were created by a computer program that generated synthetic voiced plosive stimuli with formant transitions that were matched to those of the stimuli used in previous studies. The stimuli were presented in an auditory-alone condition.

Auditory + Visual stimuli

Auditory stimuli were presented in conjunction with visual speech information. The stimuli were generated by a computer program that matched the visual information to the auditory stimuli. The stimuli were presented in an auditory + visual condition.

Procedure

Each child participated in two assessments. The first assessment was conducted at Time 1, and the second assessment was conducted at Time 2. The children were assessed at Time 1 and Time 2.

RESULTS

Time 1

- The Cochlear Implant Group performed better than the Control Group in the auditory-alone condition. The Cochlear Implant Group's auditory-alone responses were more consistent and categorical than the Control Group's responses.

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Time 2

- The Cochlear Implant Group's auditory-alone responses were more consistent and categorical than the Control Group's responses.

DISCUSSION

The results of this study suggest that children using a cochlear implant are influenced by visual speech information to a greater extent than children with normal hearing. The present study investigated whether working memory and working memory-related measures change with increased auditory experience. The present study investigated whether working memory and working memory-related measures change with increased auditory experience.

CONCLUSION

The results of this study suggest that children using a cochlear implant are influenced by visual speech information to a greater extent than children with normal hearing. The present study investigated whether working memory and working memory-related measures change with increased auditory experience.