



Behavior problems in children with cochlear implants



Wei-Chieh Chao^{a,b}, Li-Ang Lee^b, Tien-Chen Liu^c, Yung-Ting Tsou^b, Kai-Chieh Chan^b,
Che-Ming Wu^{b,1,*}

^a Department of Otolaryngology—Head and Neck Surgery, Chang-Gung Memorial Hospital, Keelung, Taiwan

^b Department of Otolaryngology—Head and Neck Surgery, Chang-Gung Memorial Hospital, Linkou Branch, College of Medicine, Chang-Gung University, Taoyuan, Taiwan

^c Department of Otolaryngology, National Taiwan University Hospital, Taipei, Taiwan

ARTICLE INFO

Article history:

Received 27 October 2014

Received in revised form 30 December 2014

Accepted 5 February 2015

Available online 13 February 2015

Keywords:

Cochlear implant
Mandarin Chinese
Behavior problems
Parenting stress
Auditory performance

ABSTRACT

Objectives: (1) To examine behavior problems in Mandarin-speaking children with cochlear implants (CIs); (2) to investigate the associated factors of problem behaviors; (3) to understand the relationships between behavior problems and parenting stress.

Methods and materials: Sixty patients (25 boys, 35 girls) aged 6–18 years (mean = 12.2 ± 3.2) who used CIs for a mean duration of eight years participated in the study. Behavior problems were assessed by Achenbach's child behavior checklist (CBCL). Categorical auditory performance (CAP) and speech intelligibility rating (SIR) scales were utilized to investigate auditory performance and speech production intelligibility. Parenting stress index (PSI) was filled out by parents to measure parenting stress level.

Results: Significantly more CI subjects had problems with 'Withdrawn/Depressed' ($p = 0.010$), 'Social Problems' ($p < 0.001$), 'Thought Problems' ($p < 0.001$), 'Attention Problems' ($p < 0.001$), 'Aggressive Behavior' ($p = 0.010$) and 'Overall Behavior' ($p = 0.001$) than the normative sample did. 'Social Problems' was the most common problem and could be independently associated with gender, socioeconomic status and CAP ($R^2 = 0.361$). CAP score was also associated with Overall Behaviors ($R^2 = 0.081$). The results of PSI had a significant positive correlation with almost all CBCL subscales ($p < 0.05$).

Conclusion: The CI subjects still exhibit social and attention problems, which may in turn increase parenting stress. Good family support as well as aural–verbal rehabilitation are of particular importance in determining behavioral outcomes in CI children.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Development is under considerable influence of language as language mediates social relations and aids in behavioral control [1,2]. As a result, language delay may be an underlying cause of problem behaviors [3,4]. Children with sensorineural hearing loss were thus often reported to exhibit more severe behavioral problems than their hearing peers did [4,5]. These patients not only showed more externalizing behavior problems (e.g., rule-breaking and aggressive behaviors) than the hearing children (30–50% vs. 3–18%) [6–8], but demonstrated higher rates of internalizing problems (e.g., anxiety and depression; 25–38% vs. 2–17%) [6,7,9]. They also exhibited more attention problems and had less parent–child communication [5].

With the restoration of hearing via a cochlear implant (CI) [10], a significant reduction in behavioral, emotional and social problems was observed in many studies [4,11,12]. Preschoolers with CIs were reported to perform similarly to their hearing age mates on the child behavior checklist (CBCL) after one year of implant use [13]. It was also found that CIs increased self-sufficiency and stabilized family and social relationships [14,15]. However, there were still studies indicating behavioral problems in CI children, such as externalizing behavior problems [16] and emotional and peer problems [17]. These problems were reported to have an association with worse oral language performance and/or age at implantation [16,17], suggesting that auditory experience and the resulting development of oral language may have crucial effects on CI children's behaviors.

Although parents of CI children generally held a positive view toward the outcomes of cochlear implantation [15], they still experienced greater stress than parents of normal-hearing children did [18]. Our previous study [19] showed that these parents actually experienced the highest stress level during the

* Corresponding author. Tel.: +886 3 3281200x3972; fax: +886 3 3979361.

E-mail address: bobwu506@hotmail.com (C.-M. Wu).

¹ Co-first author.

post-implant 0–2 years, and more parents suffered from stress related to child characteristics than from stress related to parent characteristics. It shows that the post-implant adjustment problems of the implanted children may be the main source of parenting stress.

Therefore, the present study aimed (1) to cross-sectionally investigate the behavior problems in the Mandarin-speaking children with CIs aged 6–18 years, (2) to find out the associated factors of problem behaviors, and (3) to understand the relationship between behavior problems and parenting stress.

2. Materials and methods

2.1. Participants

Sixty Mandarin-speaking patients (25 boys and 35 girls) with CIs who met the following criteria participated in this study: (1) the subjects aged 6–18 years; (2) the subjects did not have developmental/neurological difficulties; (3) the subjects went to mainstream schools; (4) the subjects used oral communication; (5) the subjects returned all the questionnaires. They aged 12.2 ± 3.2 years (range = 6.9–18.1 years) at the time of the study. They received CIs at the mean age of 4.0 ± 2.5 years (range = 1.1–14.4 years) in our center during years 2000–2011 and had used the CIs for a mean duration of 8.2 ± 3.3 years (range = 2.2–13.3 years).

A demographical information form was filled out by the parent of the participants, in which the parents' education background and occupational status were asked to derive their socioeconomic status (SES) based on the Hollingshead two-factor index of social status [20]. The index has been widely used in many studies that require the measurement of SES [19,21,22]. A five-level item was used to rate parent educational level (1 = parents who were illiterate; 5 = parents who graduated from graduate school) and occupational status (1 = unskilled workers; 5 = professionals). Computed from the educational and occupational levels (weighted by 4 and 7, respectively), the SES was obtained using a five-point scale (1 = lowest; 5 = highest).

The behavioral outcomes of the participants were compared to an age-matched normal-hearing normative sample provided by the test developer of the Chinese-version CBCL [23].

All informed consents signed by participants, their guardians and their school teachers were obtained before the test procedures. The study protocol was approved by the Institutional Review Board, Chang-Gung Memorial Hospital, Taoyuan, Taiwan.

2.2. Test materials

2.2.1. Behavior problem measure: Achenbach's CBCL for ages 6–18

The CBCL assesses the intensity of different behavior problems [23–25]. There are a parent's version, which is filled out by parents of the target child, and a self-report version, which is filled out by the children themselves if they are above 11 years of age. In this study, only parent's version was used because half of our participants were under 11 years of age. The checklist includes 8 subscales: 'Anxious/Depressed', 'Withdrawn/Depressed', 'Somatic Complaints', 'Social Problems', 'Thought Problems', 'Attention Problems', 'Rule-breaking Behavior' and 'Aggressive Behavior'. A 3-point scale is used for all the subscales (0 = never; 1 = sometimes; 2 = very often). The former three subscales yield the composite 'Internalizing Behavior Problem' scale, and the latter two subscales yield the 'Externalizing Behavior Problem' scale. The total score of the 8 subscales suggests the level of the subjects' "Overall Behavior". The reliability of each subscale has been confirmed (0.68 to 0.87) [24], and the checklist has been commonly used as an evaluation tool for behavioral problems [5,13]. Raw scores are transformed into T-scores, which are derived from the age- and gender-matched normative sample. Higher T-scores refer to greater intensity of the behavior problem. The mean T-score of each subscale is 50 ± 10 . According to the T-scores, the children's performances on each subscale are classified as in the "normal range," "borderline range," or "clinical range." The cutoff points for the three ranges are 1.5 standard deviation (SD) and 2 SD for the subscales, and 1 SD and 1.3 SD for the 'Internalizing'/'Externalizing' and 'Overall Behavior' scales [23,25].

2.2.2. Speech performance measures: Categorical auditory performance (CAP) and speech intelligibility rating (SIR) scales

The CAP scale, developed by the Nottingham group, assesses the auditory performance of deaf children using a nonlinear hierarchical scale that consists of eight performance categories (from 0 to 7). Its reliability has been confirmed [26]. The SIR scale, also designed by the Nottingham group, is used to evaluate the speech production intelligibility of profoundly deaf children. It categorizes spontaneous speech intelligibility of the children into five categories (from 1 to 5). The reliability of the scale has been proven [27,28]. In this study, the two scales were rated by two speech therapists during the CI students' most recent follow-up visit. The categorizing criteria of the scales are listed in Table 1.

Table 1
Criteria of categorical auditory performance and speech intelligibility rating scales.

Rating Scale	Criteria of categorical auditory performance	Criteria of speech intelligibility rating
7	Use of telephone with known listener	n/a
6	Understanding of conversation without lip-reading	n/a
5	Understanding of common phrases without lip-reading	Connected speech is intelligible to all listeners. Child is understood easily in everyday contexts.
4	Discrimination of some speech sounds without lip-reading	Connected speech is intelligible to a listener who has a little experience of a deaf person's speech
3	Identification of environmental sounds	Connected speech is intelligible to a listener who concentrates and lip-reads
2	Response to speech sounds	Connected speech is unintelligible. Intelligible speech is developing in single words when context and lip-reading cues are available
1	Awareness of environmental sounds	Connected speech is unintelligible. Pre-recognizable words in spoken language, primary mode of communication may be manual
0	No awareness of environmental sounds	n/a

n/a = Not applicable.

Download English Version:

<https://daneshyari.com/en/article/4111877>

Download Persian Version:

<https://daneshyari.com/article/4111877>

[Daneshyari.com](https://daneshyari.com)