

Parents' Views on Changing Communication After Cochlear Implantation

Linda M. Watson

University of Birmingham

Tim Hardie

Sue M. Archbold

Alexandra Wheeler

Ear Foundation

We sent questionnaires to families of all 288 children who had received cochlear implants at one center in the United Kingdom at least 5 years previously. Thus, it was a large, unselected group. We received 142 replies and 119 indicated that the child and family had changed their communication approach following cochlear implantation. In 113 cases the change was toward spoken language and in 6 cases the change was toward signed communication. Parents were asked to respond to statements about communication with their deaf child, and their responses indicated that parents wanted the most effective means of communication and one that their child would find most useful in the future. Findings that emerged from parents' comments indicated that the change toward greater use of spoken language was child-led and driven by increased audition. Parents also valued the contribution of signed communication.

Cochlear implants are an accepted option for profoundly deaf children, and their use has become widespread over the past 20 years. The outcomes from implantation have been the subject of much research, with a great deal of the research concentrating on speech perception and production.

There has been a great interest in the factors that influence progress after implantation, and one factor that has received attention is that of communication approach. The question of whether children with cochlear implants perform better in an oral environment or in situations where signed communication is used (either a natural sign language, e.g., British Sign

Language (BSL) or total or simultaneous communication in which sign is used in conjunction with speech) remains contested despite considerable research (Thoutenhoofd et al., 2005). Connor, Hieber, Arts, and Zwolan (2000) found no difference in speech perception or production performance in 147 implanted children between those in oral environments and those in environments using signed communication, and Robbins, Svirsky, and Kirk (1997) reported roughly equivalent outcomes for 23 children with cochlear implants in contrasting communication settings. Archbold et al. (2000) compared groups of children on measures of speech perception and production 3 years after implantation and found that those using oral communication outperformed those using signed communication. However, when those who had begun using oral communication and always used oral communication exclusively were compared with those who had begun by using signed communication (from birth or diagnosis of deafness) and changed to oral communication, there was no significant difference between them.

Other studies, however, have found children in oral settings to outperform children in settings using simultaneous communication in terms of speech production and perception (Miyamoto, Kirk, Svirsky, & Sehgal, 1999), spoken language development (Cullington, Hodges, Butts, Dolan-Ash, & Balkany, 2000), and ability to derive auditory benefit from their cochlear implant (Geers et al., 2000). A study by Kirk et al. (2002) reported that oral children made significantly more rapid gains in communication abilities

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than children who used simultaneous communication. In addition, Osberger, Zimmerman Phillips, and Fisher (1998); Tobey, Geers, Brenner, Altuna, and Gabbert (2003); Tobey, Rekart, Buckley, and Geers (2004); and Burkholder and Pisoni (2006) all suggest from the findings of their research that children with cochlear implants perform better in an oral environment, although other researchers (e.g., Connor et al., 2000) have suggested that other factors, such as age at implantation, may be more significant.

However, in much research, there appears to be an underlying assumption that the child's communication approach remains static and does not change after cochlear implantation; the child's communication approach at one point in time is used as a constant, rather than considering how it may change over time. Yoshinaga-Itano (2006) reported three cases of profoundly deaf children who received cochlear implants prior to 3 years of age and who did change from using signed communication to oral communication. In a larger study, Watson, Archbold, and Nikolopoulos (2006) investigated the patterns of communication use of 175 children who had received a cochlear implant at the Nottingham Cochlear Implant Programme by investigating preexisting data that had been systematically collected by the cochlear implant center and found that there was a shift toward the use of spoken language during the 5 years after implantation. Of the 175 children, 50 (29%) were using oral communication prior to receiving a cochlear implant and 106 (61%) were using oral communication 5 years after receiving a cochlear implant. The change was most marked in the group of children who received their implant prior to their third birthday. For this group ($n = 29$), three children (10%) were using oral communication preimplant and by 5 years after implantation this had increased to 24 (83%). For children implanted before their third birthday, a marked change in communication approach had taken place, but this study did not investigate the reasons why the child had changed communication approach.

Cochlear implantation is often chosen by parents with the goal of spoken language development (Archbold, Sach, O'Neill, Lutman, & Gregory, 2006), and this is supported by the emphasis by many implant teams in advising or providing habilitation programs

after implantation that focus on the development of auditory and oral skills. It is also supported by the measurement of outcomes from implantation being most often considered in terms of speech perception and production (Thoutenhoofd et al., 2005). Nicholas and Geers (2003, 2006) found that parents' satisfaction with their child's cochlear implantation was significantly related to their child's speech and language achievements. Thus, it is easy to envisage that parents would be persuaded of the desirability of providing an oral environment for their child and leave their child with no option but to use spoken language. This is particularly likely because the majority of deaf children are born to hearing families (Mitchell & Karchmer, 2004, estimate 96%) who are unlikely to be familiar with signed communication or to have considered using it with their child prior to a diagnosis of deafness. With newborn hearing screening, children are being considered for implantation and decisions about communication approach are taking place earlier than ever before. These decisions are being made in a technologically driven world in which cochlear implantation may be seen as a "cure" for deafness (Luterman, 2005), and it is important that parents are supported in their decision making by as much information as possible.

The question of whether a child's communication approach remains fixed following cochlear implantation or changes has implications for parents' choice of early communication approach with a young deaf child who is being assessed for possible cochlear implantation. If communication approach does not change, then parents who desire that their deaf child should use spoken language will be keen to use spoken language exclusively with their child from the outset. If communication approach does change over time after implantation, then the reasons for that change are also important for parents and for those advising them.

This study investigated the views of parents regarding communication approach used by and with their child, both prior to cochlear implantation and at the current time. The aim was to investigate two questions:

- Has the communication approach used by and with their child in the family changed since cochlear implantation?

- If so, what, in the parents' opinion, are the reasons for that change?

Methods

The study comprised a questionnaire, which was sent to the families of all children who had received a cochlear implant at the Nottingham Cochlear Implant Programme at least 5 years previously. The questionnaire elicited quantitative and qualitative data. It asked families to provide information regarding their child's communication approach both prior to cochlear implantation and at the present time. If the family indicated that there had been a change in communication approach by the child and within the family, they were invited to respond to statements giving reasons for this change and to make any further comment they wished in a free text box.

Questionnaires were sent to 288 families of deaf children who had received a cochlear implant at the Nottingham Cochlear Implant Programme at least 5 years previously. This represented the whole cohort of children who met this criterion, irrespective of etiology, age at implant, or age of onset of deafness. Nottingham Cochlear Implant Programme accepts referrals from throughout the United Kingdom, and the children come from the full range of social backgrounds, educational settings, and communication choices. The questionnaires were changed to respond to the queries of the local ethics committee. The questionnaires were coded so that it was possible to identify those families that had responded, and a follow-up letter and questionnaire were sent to those who had not replied after 3 weeks. The questionnaire was short, it could be completed quickly, and we included an explanatory letter and a stamped addressed envelope with the questionnaire, factors that have been found to encourage a higher response rate (Hudson & Miller, 1997).

The questionnaire elicited quantitative and qualitative data from the parents. The questionnaire was in two sections, the first asking whether their child had changed communication approach and the second investigating the reasons for the change. In the first section, families were requested to indicate their child's mode of communication at two points in time,

prior to receiving the cochlear implant and currently, using a five-point Likert-type scale: entirely through spoken language, mainly through spoken language, about equal spoken language and sign language, mainly through sign language, and entirely through sign language.

We did not ask families to provide more detail of the nature of the signed communication they used, that is, whether they used BSL or total or simultaneous communication (i.e., spoken English with sign support) or whether they were using signs in the development of early communication skills if they checked the box that indicated they used sign language. We were aware that many parents might interpret this question differently and that for many children, language and communication mode is not fully established prior to implantation at an early age. There is wide variation in the way in which sign is used to communicate, and with young children the use of gesture is common. This group was older at implantation than would be expected now (mean age at implantation 54 months), as they were implanted over 5 years before the study took place when age at implantation was generally older and in most cases the child's communication approach would have been established prior to implantation.

In the second section of the questionnaire, families were invited to give their views on communication with their deaf child and, if communication approach had changed, to give the reasons for this change. As a starting point, we provided a set of 10 statements with which they were requested to state their level of agreement, again using a five-point Likert-type scale: agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, and disagree strongly. Families were requested to respond to as many statements as they wished. At the end of the questionnaire, they were invited to comment further about communication or to make other comments in a free text box. Parents were encouraged to complete the free text box to ensure that any additional issues, not covered by the 10 statements, were raised.

The 10 statements were originally formulated by the research team from discussions with large numbers of parents over time at Nottingham Cochlear Implant Programme and The Ear Foundation. We also used data from the earlier study (Watson et al., 2006) and our professional expertise to inform the

composition of the statements. We invited other professionals and parents who worked in the field of cochlear implantation to review the statements and provide feedback, following which we made changes to both the statements and the format of the questionnaire in line with their suggestions. The questionnaire then underwent further revision following in-depth discussions with experienced researchers who form the local ethics committee, prior to obtaining ethical approval. Thus, we sought to increase the validity of the study by basing our work on theory, utilizing our professional expertise, including parents, using multiple researchers, and inviting other experts to examine the statements (Cohen, Manion, & Morrison, 2000).

The statements for parents to comment on the change in communication approach were as follows:

1. I want to use the most effective way of communicating with my child.
2. I want to use the easiest method (for me) of communicating with my child.
3. I want to use the method of communication in which I am most skilled.
4. Using sign language appeared to be impeding my child's speech development.
5. Using speech appeared to be impeding my child's sign language development.
6. I want to use the language which is most likely to be useful to my child in the future.
7. I want my child to know British Sign Language because he/she is part of the Deaf community.
8. My child preferred to use sign language.
9. My child preferred to use spoken language.
10. I was following the advice of my teacher of the deaf.

Five statements (numbers 1, 2, 3, 6, and 7) related to the parents' wishes. All these commenced with "I want" They were intended to explore parents' views on communication with and for their deaf child. Four statements (numbers 4, 5, 8, and 9) related to the parents' perception of their child's own preference or the effect that the communication approach appeared to be having on their child (e.g., whether one communication approach appeared to be impeding the development of the other). The final proposition suggested that parents were following the professional advice

offered by their teacher of the deaf. This could be a local teacher of the deaf or a teacher of the deaf attached to the cochlear implant program; in the United Kingdom, it is common to have a teacher of the deaf working on an implant team who acts as the key worker with the family and conveys the advice of the implant team.

Following analysis of the questionnaires, 12 families were selected for interview. This paper presents the findings of the questionnaires. The results of the interviews are presented elsewhere (Wheeler, Archbold, Watson, & Hardie, 2007).

Results

In the results discussed below, statistical significance was assessed using *t* tests when there were sufficient numbers to allow parametric tests. Nonparametric tests involved Wilcoxon signed-rank tests for paired observations, Mann-Whitney *U* tests, and chi-square tests. Statistical significance was accepted at the 0.05 level.

We received 142 replies to the questionnaire (i.e., a response rate of 49.3%); this was after the initial mailing, followed by a further mailshot to nonrespondents 3 weeks later. Given the response rate of 49.3%, we were concerned to gauge the extent to which the responses were likely to be representative of the whole cohort or whether there were any significant differences between those who returned the questionnaire and those who did not. We compared the two groups on age at implantation and gender. Age at implantation is the most consistent factor that predicts outcomes after implantation, but as shown in Table 1, we found no significant differences for either variable.

Comparisons also were made on the Categories of Auditory Performance (CAP) test (Archbold, Lutman, & Marshall, 1995), using data made available by the Nottingham Cochlear Implant Centre. CAP (Archbold et al., 1995) is a profile of developing auditory skills that is influenced by age at implantation, and again, on this measure of outcome, there was no significant difference between the groups. Fortnum, Stacey, and Summerfield (2006) suggest that respondents may differ from nonrespondents in other ways, such as affluence, but this was not considered in this

Table 1 Comparison of those who responded with those who did not respond to the questionnaire

	Those who responded (<i>n</i> = 142)	Those who did not respond (<i>n</i> = 146)
Mean age of child at time of implant (months)	54.14 (SD 29.8)	65.66 (SD 36.12)
CAP ^a score 5 years after implantation	6 (SD 1.06)	6 (SD 1.03)
Male	73 (51%)	75 (51%)
Female	69 (49%)	71 (49%)

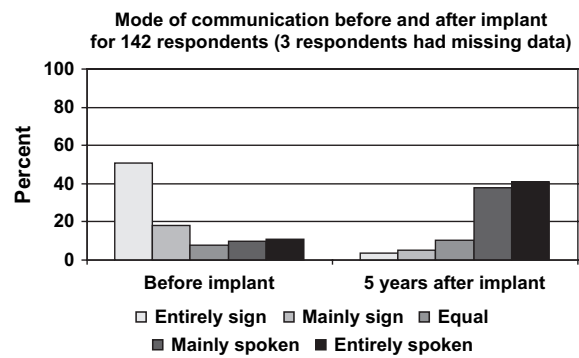
^aAn outcome measure of auditory perception.

study. The responses to the questionnaire included two that reported that the child no longer wore their speech processor, demonstrating that it was not only families of children for whom the cochlear implant could be viewed as “successful” that replied. This proportion reflects the usage rate reported by Nottingham Cochlear Implant Programme (Archbold, Nikolopoulos, & Lloyd, in press).

We examined the responses to the first section of the questionnaire, which asked families to rate their child’s communication approach prior to implant and at the current time.

Three families left blank the question related to their child’s communication approach prior to implant and annotated the questionnaire with the comment that their child did not communicate using either spoken language or signed communication prior to implant, having received the implant at a young age. Two of these families did, however, completed the question relating to current communication approach, with one family checking “Entirely through spoken language” and the second checking “Mainly through spoken language.” Their responses for current communication approach are included in the graph in Figure 1, which shows the communication approach for all those who responded, prior to implant and at the time of responding to the questionnaire. Of the 142 who responded, 113 shifted toward greater use of spoken language, 20 showed no change, 6 showed a shift toward greater use of signed communication, and the data for 3 were incomplete.

Having ascertained from our analysis of the first section of the questionnaire that there was a change in

**Figure 1** Communication approach before implant and at least 5 years after implant.

communication approach, we analyzed the responses from the second section of the questionnaire, which comprised the 10 statements discussed above and the comments in the free text box. Thus, we investigated reasons for communication changes in the opinions of the 119 families who indicated a change. Four families did not complete the rest of the questionnaire. We do not know the reason for this noncompletion. A further 14 families did not respond to every statement, and thus the number of responses varied slightly between statements. Table 2 shows the responses of the families to each of the statements.

We grouped the results for the statements according to two categories: those describing the parents’ perspective (1, 2, 3, 6, 7, and 10) are shown in Figure 2 and those describing the child’s preferences (in the opinion of their parents) (4, 5, 8, and 9) are shown in Figure 3.

Three statements elicited strong agreement, two that related to the parents’ perspective: “I want to use the most effective way of communicating with my child” and “I want to use the language which is most likely to be useful to my child in the future.” These are shown in Figure 2. The third statement related to the parents’ perception of their child’s preference: “My child preferred to use spoken language.” This is shown in Figure 3.

The statement that the family wanted to use the most effective way of communicating with their child evoked the strongest agreement with 84% agreeing strongly and an additional 9% agreeing somewhat. A slightly lower percentage (71%) agreed strongly with the statement that they wanted to use the

Table 2 Responses from 119 families that indicated their child had changed communication mode, with chi-square calculation showing that all except statement 2 were significant

	Agree strongly	Agree somewhat	Neither	Disagree somewhat	Disagree strongly	Chi-square ^a	p value (df = 4)
Want most effective	103 (84%)	11 (9%)	1 (0.8%)	0	0	351.6	<.0005
Want easiest (for parents)	32 (26%)	23 (19%)	18 (15%)	18 (15%)	22 (18%)	5.8	NS
Want parents most skilled	39 (32%)	26 (21%)	21 (17%)	17 (14%)	11 (9%)	19.6	<.001
Sign appeared to be impeding speech	10 (8%)	18 (15%)	25 (20%)	23 (19%)	38 (31%)	18.5	<.001
Speech appeared to be impeding sign	2 (1.6%)	9 (7%)	29 (24%)	18 (15%)	54 (44%)	74	<.0005
Want most useful for the future	87 (71%)	24 (20%)	3 (2.5%)	0	1 (0.8%)	239.6	<.0005
Want BSL for Deaf community	25 (20%)	41 (34%)	32 (26%)	8 (7%)	7 (6%)	39.3	<.0005
Child-preferred sign	8 (7%)	14 (11%)	33 (27%)	28 (23%)	29 (24%)	20.8	<.0005
Child-preferred speech	56 (46%)	29 (24%)	17 (14%)	7 (6%)	5 (4%)	76.4	<.0005
We were following advice of teacher of the deaf	16 (13%)	18 (15%)	59 (48%)	10 (8%)	10 (8%)	75.5	<.0005

Note. Not every family responded to all questions.

^aExpected values assume an equal distribution of answers from those who responded.

language that was most likely to be useful to their child in the future, and an additional 20% of respondents agreed somewhat with this statement. Thus, these two statements both prompted over 90% agreement. For the third statement with which parents showed a high level of agreement (“My child preferred to use spoken language”), 46% agreed strongly and 24% agreed somewhat.

The responses to the other statements that related to parents’ wishes (see Figure 2) were as follows: slightly over 50% of respondents agreed with two statements (they wanted their child to know BSL because he/she is part of the Deaf community and they wanted to use the method of communication in which the parents were most skilled). The response to the statement that they wanted to use the method that was easiest for the family was not significant and so could have been achieved randomly. The statement that they were following the advice of their teacher of the deaf was the only 1 of the 10 for which the greatest number of responses was neutral (i.e., they neither agreed nor disagreed with the statement).

The responses to the statements about parents’ perceptions of the child’s views and behavior did not evoke such extreme responses as to those in the group discussed above. The strongest agreement was to the

statement that their child preferred speech, with 70% agreeing with this, as discussed above. A much smaller percentage (18%) agreed with the statement that their child preferred to sign, which would be in keeping with the much smaller number for whom the change in communication approach was toward signed

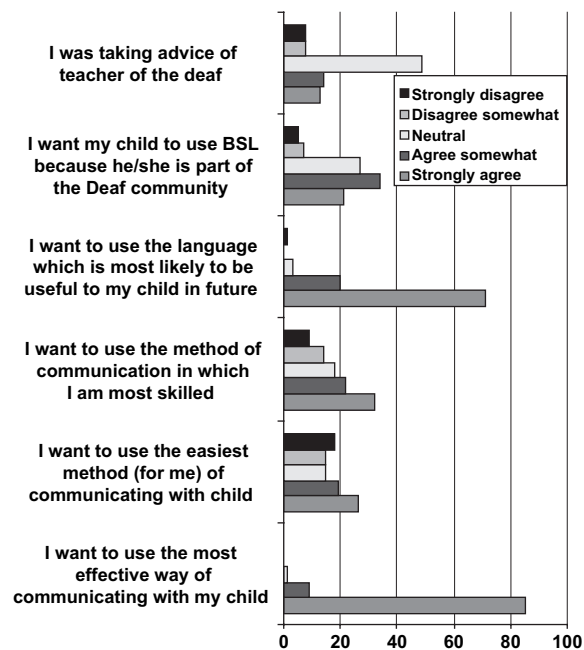


Figure 2 Parents’ perspective on reasons for change.

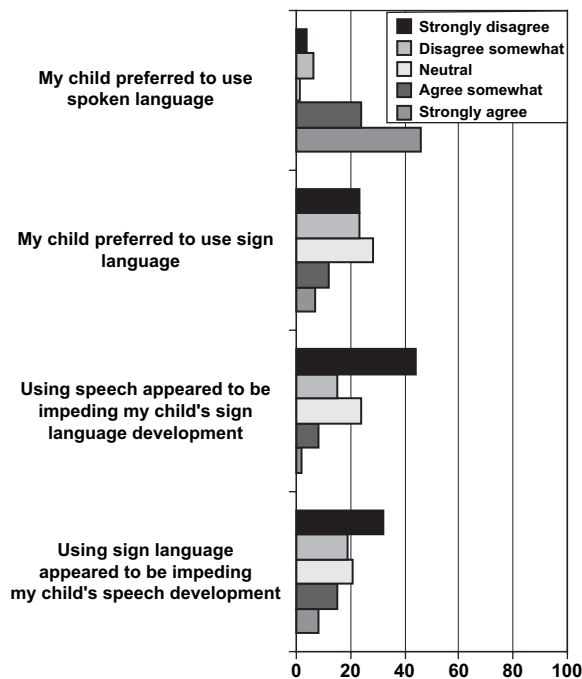


Figure 3 Parents' perceptions of child perspective.

communication. Parents disagreed with the two statements that asked whether one language appeared to be impeding the development of the other, with 50% disagreeing with the statement that the use of sign language appeared to be impeding their child's spoken language development and 59% disagreeing with the statement that using spoken language appeared to be impeding their child's sign language development. Almost a quarter (23%) of parents, however, agreed that using signed communication appeared to be impeding their child's development of spoken language, and 9% agreed with the proposition that using spoken language appeared to be impeding their child's development of sign language. Thus, the parents were not generally of the opinion that using one language (either spoken language or sign language) appeared to impede their child's development of the other language, although there was some disagreement with this statement.

Analysis of the Free Comments Made by Parents

Finally, we analyzed the comments. Families were invited to provide additional information regarding why their communication approach had changed or to make any other spontaneous comments, and 99 re-

sponses included some comment. We hoped that by offering an invitation to comment we would gain additional insight into parents' views on communication and cochlear implants. Parents were not invited to comment on each statement individually but to include any comments they wished to make in the free text box. We analyzed the comments by allowing categories to emerge from the data using "grounded theory" (Strauss & Corbin, 1990). This approach to analysis does not impose predetermined categories on the data, rather the data are examined to uncover themes. As a new topic is identified, the data are reexamined to find other examples thereof and therefore to explore whether this is an isolated example or whether it represents a new idea. It is particularly useful for identifying unexpected themes. This approach enabled us to investigate parents' views on communication and to uncover any views not addressed by the 10 statements. We anticipated that the statements might evoke some additional comments and that parents would introduce other topics.

We identified nine categories of information about the reasons for the change of communication that arose from the data.

Following the Child's Preference

Parents indicated that in changing communication approach they were following their child's preference. In most cases this was a preference for spoken language, thus supporting their response to the statement that their child preferred to use spoken language, but in a minority of cases it was a preference for sign language. Many comments supported these responses, for example:

Although he still remembers some signs he prefers not to use them.

In choosing an implant we were wanting to give him a choice. He now, at 17, definitely has that choice—he chooses his implant, he loves to hear and he chooses to speak.

Our communication method changed gradually as our child became more effective in using spoken language & showed a preference for communicating in this way.

We let <child's name> decide if he wanted us to use sign or speech. He picked speech.

Change Was Child-led

Parents went beyond saying that they were following the child's preference to stress that the change was actually led by the child. Some examples are as follows:

It was a very natural and child driven change to spoken language. He prefers spoken language both receptively and productively.

Our communication mode has always been motivated by <child's name> request.

We have not dictated the communication methods but have followed <child's name> lead ... he tells us to speak not sign.

<child's name> says he doesn't need sign language any more.

The change was made because we followed our child's lead once spoken language began to develop.

Parents' Preference

There was evidence of some strength of feeling on the part of parents for one language, mostly concerning the development of spoken language. In some cases, this was expressed in definite terms, for example: "From the beginning our objective was for <child's name> to use spoken language. So we encouraged her to use spoken language at all times" and "As <child's name> was deafened we were adamant that she should not lose her speech." Other families employed more measured language to express this wish: "We always hoped that <child's name> would speak." In one case, parents were very keen for their child to develop BSL: "Because <child's name> has a deaf sister we needed him to keep up with the BSL."

Importance of the Use of Signed Communication When Child Was in the Early Stages of Language Development

There were several comments suggesting that the use of signed communication was important for their

child, particularly in the early stages of development of spoken language. This was a statement that we had not posited. Examples included:

We had to get his sign language going which aided his speech in the years to come.

Initially sign support helped with understanding new topics.

Sign was useful in maximizing her potential for speech.

Sign helped him to develop his early language before he learned to use his cochlear implant.

These families therefore valued signed communication (either BSL or signs used in conjunction with speech) as an aid to communication prior to the development of spoken language. They saw continued value in signed communication to assist in communication when the use of spoken language was difficult, for example at the swimming pool, or as an aid to learning new vocabulary or for purposes of clarification.

Continuing Role for Signed Communication

Many parents expressed in the comments that they saw benefits for their child to be fluent in both spoken and signed communication, seeing advantages for their child both now and in the future. This was reported as either the parents' wish or the child's opinion and came across as a pragmatic decision within the family. There were 30 comments related to the use of signed communication (either accompanying speech or BSL) in addition to spoken language. Following are a few examples.

She will use which form of communication is necessary depending on who she is talking with.

She now happily drifts between being very capable in a totally hearing placement ... to mixing with deaf friends who only sign.

Now 9 years on she is fluent in speech, BSL, SSE and learning French rapidly!

He now has the best of both worlds and can communicate with deaf, who have sign language only, and speak to the rest of us.

Use of Total or Simultaneous Communication

In commenting on change in communication approach, 12 families stressed the fact that they had used total communication (by which they meant the use of spoken language with accompanying signs) prior to their child receiving a cochlear implant, with comments such as

We have always used speech with sign.

We always used speech and sign together.

They seemed to find that total communication eased the change toward spoken language:

We used both sign and spoken language all the time, using sign to teach spoken language. When she was learning new words from just listening she dropped the sign language.

Change as a Result of Increased Access to Sound

One reason for change that came through strongly in the parents' comments was the simple fact that the implant enabled the child to hear and therefore spoken language became easier. This was not a statement that we had suggested, although it could be inferred from the statement that the child preferred spoken language. The following are some examples of comments.

As <child's name> became more competent in listening ... he dropped the signing.

Once <child's name> had started to hear from his implant he soon stopped using BSL and started using speech.

Post-implant ... she had less and less need to look at us when we communicated because she was using her ears not her eyes. Impossible to sign to someone who's not looking at you!

Obviously there has been a natural move to using more spoken language as her spoken (language) has developed with her hearing.

Use of Sign Impeding Development of Spoken Language

The majority of parents disagreed that using sign appeared to be impeding their child's development

of spoken language. There were, however, two comments offered in support of this view, both related to the child's educational environment:

On the days <child's name> attended <school for deaf> we noticed he came home preferring sign rather than use his voice whereas on days he went to mainstream school, he was noticeably more vocal. This made our decision to place <child's name> full time into a mainstream setting.

As <child's name> used her implant more and more the mainly signing environment of her nursery placement appeared to impede her spoken language which has developed rapidly. A successful placement at mainstream school resulted in her spoken language improving tremendously.

Advice From Professionals

The majority of parents made no comment on advice offered by their teacher of the deaf, which supports the neutral response to the proposition that they were following this advice. Only three families commented on advice from a teacher of the deaf, and these were general comments related to their perception of the quality of the advice. Two further families discussed advice from an Auditory Verbal Therapist; one comment was "We changed to spoken language mostly about 6 months after 'switch on' as we wanted < child's name> to concentrate on acquiring spoken language. This was following advice from <name> Auditory Verbal Therapist."

Discussion

The results of this study demonstrate that the majority of children do change their communication approach following cochlear implantation and that this change is almost exclusively toward greater use of spoken language, although a minority of children changed toward greater use of sign language. This finding concurs with an earlier paper (Watson et al., 2006) that considered changes by examining preexisting data and showed that the parents' perceptions of changes in communication approach were in agreement with those of the cochlear implant center professionals, which formed

the basis of the data used in the previous study. This article probes the parents' views and reveals that the situation is complex.

In drawing conclusions from this study, we are aware of certain limitations that mean that we need to be cautious of generalizing from these results. We did not ask parents, or seek to establish by other means, each child's overall level of communicative or linguistic ability. Thus, we did not investigate the question of whether a change toward greater use of spoken language accompanied, or was in part driven by, an increase in the child's language level. This question will be explored with those families who are selected for interview.

Whereas 113 children changed toward greater use of spoken language, six children changed toward greater use of signed communication. In each of these six cases, the parents reported that the child was communicating entirely using spoken language prior to implant. Five of the children were reported to change from communicating "Entirely through spoken language" to "Mainly through spoken language" and the sixth from "Entirely through spoken language" to "About equal, spoken language and sign language." None of these families agreed strongly with the statement that their child preferred sign language. From the comments these parents made, it appears that a decision had been made to introduce signed communication with one child, which had resulted in an easing of behavioral difficulties, and another child had decided to start to learn sign language, which was seen in relation to her acceptance of her deafness. Four of these children were identified as having special educational needs in addition to deafness.

A new issue emerged from the comments around the use of signed communication, namely that parents valued its use, both prior to the cochlear implant and as a continuing resource following implantation. Parents held this view alongside the goal for their child to achieve spoken language. Some parents stressed that they used total communication and found this to be useful with their child. This finding concurs with the results of a questionnaire exploring parents' perspectives on aftercare following cochlear implantation (Archbold et al., 2006). In a second paper (Wheeler et al., 2007), young deaf people who have

received cochlear implants report in interviews that although they use spoken language as their main means of communication, they nevertheless value the ability to use signed communication.

With regard to why children and parents changed communication approach, the strongest agreement was with the statement that parents wanted to use the most effective way of communicating with their child. This leads to the conclusion that for these children and families, spoken language became the most effective way of communicating. From the parents' perspective, this change was child-led and they followed the child's preference. The change was facilitated by the increased access to sound that the implant afforded. These findings, however, represent the parents' perspective rather than that of the children themselves. Thus, parents were being used as proxy respondents for the children. Rapley, Ridgway, and Beyer (1998) discuss the discrepancy between the perspectives of staff and service users (in this case adults with learning disabilities) with staff being inclined to hold a more positive view and therefore highlight the need for caution in using information from proxy respondents. This study highlighted the need to investigate the views of the children themselves, and interviews have now been carried out with a sample of the children for this purpose (Wheeler et al., 2007).

The impression in this study was that parents were pragmatic and could see the benefits of both spoken language and signed communication. Signed communication was useful, particularly in situations where using spoken language was difficult, for example, swimming or playing in a ball pool, but spoken language was seen as useful for communicating with people who do not sign. Parents did not seem to be dogmatic about communication approach as revealed by the responses to the statements related to parents' wishes. Again, this concurs with the findings of interviews with deaf young people who have cochlear implants, who reported that they use whichever language is best suited to the situation (Wheeler, Archbold, Gregory, & Skipp, 2007). Following cochlear implantation, children may choose to drop sign language completely, but for many it remains a useful part of their life and may remain their preferred

language, although they may view spoken language as most useful. This would be in keeping with bilingual users of two spoken languages—a minority of deaf children with cochlear implants could retain a preference for the language they used first (in this case sign language) while at the same time developing increasing use of the second language (in this case spoken language). Spencer and Tomblin (2006), in discussing cochlear implantation following newborn hearing screening, suggest that “Potentially, these children could become facile code switchers, who utilize sign with deaf peers and speech with hearing peers” (p. 187). There are examples of children in this study whose parents report that they demonstrate just such an ability to switch between the two languages as appropriate to the context. The question of the children’s own perspective merits further investigation and will be explored in interviews with some of the children.

The finding that the majority of children who receive a cochlear implant will change communication approach away from signed communication and toward the use of spoken language supports the finding of Watson et al. (2006). It also has implications for parents’ decision making. A summary of the comments would suggest that parents saw value in the use of signed communication alongside spoken language (total or simultaneous communication) preimplant to ease communication and postimplant, at least until the child showed a preference for spoken language and that became the most effective means of communication. This finding suggests that decisions around communication choice are not fixed and that parents who choose to introduce the use of signed communication alongside spoken language are not making a lifetime decision for their child and may be easing the path to the acquisition of spoken language. If this finding is repeated, then parents may find decisions around communication approach for their newly diagnosed deaf child less difficult. The findings of this study underline the necessity for flexibility in educational provision for deaf children with cochlear implants. Parents report change in communication approach used at home, but they did not always find the same readiness to move toward greater use of spoken language at school and in two cases

reported that they initiated a change of educational placement in order to make better provision for their child’s spoken language development.

The fact that the greatest response to the statement that parents were following the advice of their teacher of the deaf was neutral (they neither agreed nor disagreed) suggests that parents make their own decision. Although this could be interpreted negatively as indicating that they ignored professional advice, a positive interpretation is equally viable, that is, that parents considered advice and then decided independently. It is possible that where the information or advice that professionals provide concurs with the parents’ own views, then parents would be unlikely to feel that they had followed the advice of the professional and thus the effect would be neutral.

Conclusions

This study of parents’ perceptions of their child’s communication approach following cochlear implantation reveals that the majority of children are changing their communication approach toward greater use of spoken language. The three main reasons for this change, in the view of the parents, were as follows: they wanted to use the most effective way of communicating with their child, they wanted to use the language that was most likely to be useful to their child in the future, and they were following their child’s preference for spoken language.

Two new findings emerged from the parents’ comments:

- Although parents want spoken language for their child, they value the use of signed communication prior to the implant and see a role for its continued use in certain circumstances.
- The change toward greater use of spoken language happens as a result of increased audition and so it is child-led. Thus, where a cochlear implant provides increased access to sound such that it becomes the easiest way for the child to communicate, then the child is likely to make that choice for himself/herself.

Further research is needed to uncover more about how the change toward spoken language can be facilitated. If it were simply the case that increased access

to sound automatically led to the use of spoken language, then this would obtain in every child for whom a cochlear implant provided audition, which is not the case. As Nicholas and Geers (2006) state “the device alone will not typically lead to spontaneous spoken language acquisition” (2006, 276).

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