

PARENTS' SENSITIVITY TO THEIR DEAF CHILDREN'S DIVERSE COMMUNICATION NEEDS

Elizabeth Levesque

The University of Melbourne
Parkville, Victoria, Australia

Abstract

Despite access to earlier diagnosis, intervention and enhanced technology, deaf children's communication needs continue to present challenges to parents and educators. Given the heterogeneity of deaf children and the numerous factors contributing to their language outcomes, there is no 'one size fits all' solution to communication. This paper presents the findings of a research study that investigated the impact of bimodal bilingual input on the communication and language development of young deaf children. The participants in the longitudinal study were eight severe to profoundly deaf young children and their hearing parents who adopted a bimodal bilingual (English and Australian Sign Language) approach to communication. The impact of the bilingual approach on the children's language outcomes was measured in terms of the quality of the parents' bilingual input, their sensitivity to their children's communication needs and their accommodation of their children's changing modality preferences. Several assessment tools were devised specifically for this study and will be described in this paper. The study found that the children's language outcomes were strongly predicted by parent sensitivity and that the children with the strongest bilingual skills changed their modality preferences throughout the 20 months of data collection. This paper will discuss the implications of the findings in terms of effective early intervention practice that supports parents' use of a bilingual approach to maximize the language outcomes for their deaf children.

INTRODUCTION: Between one and three infants in every thousand are born with permanent childhood deafness (Holte et al., 2012). More than 90 percent of these deaf babies are born to hearing parents, most of whom have had very little experience in dealing with the implications of deafness on a child's communication and language development (Marschark, 2001). For many years, the language delays of deaf children with hearing parents have been attributed to a reduced level of access to quality language experiences compared to hearing children (Marschark and Wauters, 2011). We know from the research literature that parents and caregivers play an important role in their child's development of communication and acquisition of language (Ninio & Snow, 1999). However, it is a challenging task for many parents to understand the communicative potential of their deaf child and to acquire the necessary skills to accommodate their child's specific communication needs.

Regardless of whether their child is deaf or hearing, the parents' role is to facilitate language development by providing effective scaffolding and by being sensitive and responsive to their children's communication (Janjua et al., 2002). Moreover, responsive parents will show sensitivity to their children's referential signals and topics of interest, frequently commenting on events in the surrounding environment. They intuitively adapt their interactive behaviours by way of a high degree of contingency to facilitate their children's language acquisition and adjust their communication style to suit the diverse needs of their child (Abu Bakar, Brown, and Remine, 2010; Janjua et al., 2002).

One of the variables that plays a critical part in enhancing deaf children's communication and language is access to high quality early intervention programs (Moeller, 2000). Most early intervention programs adopt a specific communication philosophy, such as an oral approach that incorporates listening and speaking, a bilingual approach that uses varying proportions of speech and sign language, or a combination of approaches that suits the needs of the child and the wishes of the parents. Research has shown that each one of these communication approaches has been demonstrated to work with some, but not all deaf children (Stredler-Brown, 2010). This is possibly due to the fact that the choice of language modality is essentially adult-led, that is, the choice is made by the parents and professionals on behalf of the child. However, such an approach may be problematic when the chosen language modality does not suit the child's sensory and language processing needs. Therefore, a model that incorporates child-led modality preferences has been proposed as a way of providing the most effective language access for young deaf children. One way of achieving this objective is by means of a bimodal bilingual intervention approach which affords access to spoken and sign language and accommodates the children's changing modality preferences to suit their immediate communication needs (Swanwick and Gregory, 2007).

BACKGROUND TO THE STUDY: Eight children with severe-to-profound deafness and their hearing parents were invited to participate in this research study. A single case design was used, in which each of the eight family units acted as their own control. All families were enrolled in the same bimodal bilingual early intervention program for deaf children and received home-based support.

PARTICIPANTS: The families were all English speaking and had no prior experience with deafness or exposure to Auslan. The children were all cognitively normal and had no known additional developmental challenges. The age of diagnosis of deafness for the eight children ranged from two months to 19 months. The aetiology of deafness remained unknown for four of the children; meningitis was identified as the cause of deafness for one child, genetic mutation (Connexin 26) was implicated for two children and prematurity was identified as the likely cause of deafness for one of the children. The children's ages at enrolment in the early intervention program varied, with only three of the children receiving early intervention by six months of age. Three of the children did not receive early intervention support until they were over 18 months of age, due to the late diagnosis of their deafness. All children were fitted with high-gain digital hearing aids shortly after diagnosis, and seven out of the eight children eventually received cochlear implants.

DATA COLLECTION: Data were collected bi-monthly in the homes, with 10 data collection points in total over a 20 month period. At each of the 10 data points, information was collected from eight different measurement tools (see Instrumentation) and videotaped records of parent-child interactions.

INSTRUMENTATION: Very few assessments have been designed to assess the bimodal bilingual skills of young deaf children (Rinaldi, Caselli, Onofrio, and Volterra, 2014; Schick et al., 2006). For this reason, this author devised several assessment tools and rating scales for this study to measure the richness of the parents' and children's interactions. Many of the assessment materials developed for this research are criterion-referenced, parent-rated scales that can be used repeatedly throughout the year. These materials have been adapted from other reputable scales published in the deaf early intervention literature and modified to suit the aims of this study. The materials went through several phases of scrutiny and review over two years in order to test validity and reliability. The parent-rated scales developed specifically for this study are the Bilingual Rating Scale, the Parent-Child Communication Scale and the Sign Intelligibility Scale. Another scale developed specifically for this study, the Bimodal Bilingual Development Scale, is not parent-rated, but is designed to be completed by a professional in collaboration with the parents.

Bilingual Rating Scale

This scale focuses on the parents' engagement with the bilingual approach and their degree of adaptation to communicating bilingually with their children. The scale is based on a five point Likert-style scale and was adapted from an existing scale of parents' participation in early intervention programs by Moeller (2000), together with de Hoewer (2007) for bilingual input and Geers and Brenner (2003) for auditory skills and spoken language items. The rating levels range from 1 (minimal level of participation and bilingual use) to 5 (exemplary level of participation and fluent, frequent use of English and Auslan).

Auslan Proficiency Rating Scale (APRS)

The Auslan Proficiency Rating Scale (Power and Carty, 1999) provides standardized descriptions of competencies in Auslan second language learning. The levels of proficiency in receptive and expressive sign language range from 'Zero Proficiency' (1), a level at which there is no ability to communicate in, or understand Auslan, to 'Native-like Proficiency' (8), a level that features complete fluency, accuracy and use of grammar as used by native or native-like signers.

Parent-Child Communication Scale

The Parent-Child Communication Scale is a five point Likert-style scale that was adapted from various existing tools that measure parent-child interaction (Brown, 2002; Hafer and Topolosky, 1995; Kyle, Woll and Ackerman, 1989; Spencer, 2001). Parents rate aspects of their interactions from 1 (weak) to 5 (strong), based on their estimation of the frequency of use of the strategy and the approximate number of hours they devote to using these strategies each day. The parents' responsiveness to their children's communication is measured using four criteria: Visual Attention, Responding to Communication, Adapting Communication and Gaining Attention. In the Parent Language Use section, the parents rate their modality use for a variety of discourse functions.

MacArthur-Bates Communicative Development Inventories (CDI)

The children's English and Auslan vocabulary and grammatical skills were measured with the adapted American Sign Language version [ASLCDI] (Anderson & Reilly, 2002) of the MacArthur-Bates Communicative Development Inventories (Fenson et al., 1993), Toddler Scale, Words and Sentences.

Bimodal Bilingual Development Scale

The Bimodal Bilingual Development Scale is a criterion-referenced scale that measures English, Auslan and general pragmatic language skills for children from birth to five years in six monthly stages, then from five to eight years in a single stage. The language indicators for English and Auslan are presented side by side in developmental stages so that parents can learn more about the relationship between the two languages.

Speech and Sign Intelligibility Checklists

The parents used the Speech Intelligibility checklist (Sedey, 1996) and the Sign Intelligibility checklist to rate their children's intelligibility in speech and sign. The latter was adapted by the researcher for this study from the Speech Intelligibility checklist, with brief descriptions of sign phonology included for each level. A seven point Likert-style scale is used, with rating 1 representing the least intelligible utterances and 7 the highest level of intelligibility.

Functional Auditory Performance Indicators

The children's auditory skills were measured with the Functional Auditory Performance Indicators (FAPI) (Stredler-Brown and Johnson, 2001). The profile presents listening skills in an integrated hierarchical order across seven categories: auditory awareness, auditory feedback and integration, localizing sound source, auditory discrimination, auditory comprehension, short-term auditory memory and linguistic auditory processing.

DATA ANALYSIS: Data yielded from assessments and scales were analysed quantitatively. The parent data were analysed for increases in ratings for their participation in the bilingual program, Auslan proficiency and the frequency of use of specific parent-child communication and interaction skills. The child data were analysed for increases in vocabulary and bimodal bilingual skills. The Pearson's Product-Moment Correlation Coefficient was used to determine if there was a significant relationship between duration of the study and parent sensitivity to communication variables. A more stringent probability level of 0.01 was used to determine statistical significance since a series of correlations was computed and there were likely associations between variables. Two-tailed tests were used in order to account for the possibility of changes in either direction. The Pearson's Product-Moment Correlation Coefficient was also used to determine whether there were statistically significant changes in English and Auslan scores over time and associations between these language scores and parent sensitivity scores. Analysis of video data was made both quantitatively (the number of utterances) and qualitatively (annotations of oral and signed utterances).

RESULTS: Analysis of the results of the parents' bilingual input and their sensitivity to accommodating their children's modality preferences revealed that these variables were strong predictors of the language outcomes of their children. Sensitivity was determined by using the Parent-Child Communication scale to measure the parents' use of a range of communication strategies and the degree to which they accommodated their children's modality preferences and fostered their language skills. Significant correlations were found between the increase in the children's English and Auslan vocabulary skills over time and the parents' use of specific communication strategies such as Visual Attention, Responding to Communication, Adapting Communication and Gaining Attention. Out of the eight children participating in this study, the three who showed the strongest language outcomes were supported by parents who scored highest in engagement with the bilingual program, Auslan proficiency and sensitivity to adapting their language input to match their children's modality use. These same children showed the highest use of Auslan in the early stages of the study, although English was their preferred expressive language by the conclusion of the study. Assessment results also showed that the level of children's intelligibility was a factor contributing to the effectiveness or ineffectiveness of parent-child interactions. The data analysed from the videotaped parent-child interactions further supported the results derived from the assessments and gave valuable insight into the communication styles of the parents. In addition, although the hearing thresholds of the eight children were similar, they developed very different auditory profiles and language skills due to variability in their use of listening devices and their ability to make use of auditory input for processing language.

CONCLUSION: The findings of this study indicate that there is no 'one-size-fits-all' approach to communication. Despite similar auditory thresholds, the eight children had diverse communication needs and a wide range of language outcomes. These differences were found to be influenced by the quality of their parents' input and their sensitivity to their child's communication. The results of assessments in this study show that parents facilitate better language outcomes and ease interactive pathways when they adapt their input to suit the language and learning needs of their child. This also includes the parents' ability to understand how the children make use of the languages that are made available to them in a bilingual context. This model differs from many early intervention programs in which parents and professionals determine the modality the deaf child will be exposed to before enough is known about their language processing and sensory abilities. It is also apparent that some parents require more guidance and support than others to develop sensitivity to their children's communication needs. It is therefore important that early intervention programs provide a model of language flexibility in which parents feel confident that interactions with their children will be satisfying and rewarding. In doing so, they will develop an ability to intuitively discern the most effective type of input that maximizes their child's use of language skills for future educational success.

REFERENCES

- Abu Bakar, Z., Brown, P. M., and Remine, M. D. (2010). Sensitivity in interactions between hearing mothers and their toddlers with hearing loss: The effect of cochlear implantation. *Deafness and Education International*, 12(1), 2-15.
- Anderson, D. E., and Reilly, J. S. (2002). The MacArthur Communicative Development Inventory: Normative data for American Sign Language. *Journal of Deaf Studies and Deaf Education*, 7(2), 83-106.
- Brown, P. M. (2002). *Parent-child interaction checklist* (Unpublished manuscript). The University of Melbourne, Australia.
- De Houwer, A. (2007). Parental language input patterns and children's bilingual use. *Applied psycholinguistics*, 28(3), 411-424.
- Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P...Reilly, J. S. (1993). *Technical manual for the MacArthur communicative development inventory*. San Diego: Singular Press.
- Geers, A. E., and Brenner, C. (2003). Background and educational characteristics of prelingually deaf children implanted by five years of age. *Ear and Hearing*, 24, 2S-14S.
- Hafer J., and Topolosky, A. (1995). *Facilitating language through play*. Paper presented at the conference of American instructors of the deaf, Minneapolis, MN.
- Holte, L., Walker, E., Oleson, J., Spratford, M., Moeller, M. P...Tomblin, J. B. (2012). Factors influencing follow-up to newborn hearing screening for infants who are hard of hearing. *American Journal of Audiology*, 21, 163–174.
- Janjua, F., Woll, B., and Kyle, J. (2002). Effects of parental style of interaction on language development in very young severe and profound deaf children. *International Journal of Pediatric Otorhinolaryngology* 64, 193–205.
- Kyle, J., Woll, B., and Ackerman, J. (1989). *Gesture to sign and speech: Final report to ESRC*. Bristol: Centre for Deaf Studies, University of Bristol.
- Marschark, M. (2001). *Language development in children who are deaf: A research synthesis.. National Association of State Directors of Special Education (NASDE)*. Alexandria, VA.
- Marschark, M., and Wauters, L. (2011). Cognitive functioning in deaf adults and children (Vol. 1, 2nd ed). In M. Marschark & P. E. Spencer (Eds.), *The Oxford handbook of deaf studies, language, and education* (pp. 486–499). New York, NY: Oxford University Press.
- Moeller, M. P. (2000). Early intervention and language development in children who are deaf and hard of hearing. *Pediatrics*, 106(3), 1-9.

Ninio, A., and Snow, C. (1999). *The development of pragmatics: Learning to use language appropriately*. Invited chapter, in T. K. Bhatia and W. C. Ritchie (Eds.), *Handbook of language acquisition* (pp. 347-383). New York: Academic Press

Power, D., and Carty, B. (1999). Auslan proficiency rating scale. Centre for Deafness and Communication Studies, Griffith University, QLD. Unpublished.

Rinaldi, P., Caselli, C., Onofrio, D., and Volterra, V. (2014). Language acquisition by bilingual deaf preschoolers: Theoretical, methodological Issues and empirical data. In M. Marschark, G. Tang, and H. Knoors (Eds.), *Bilingualism and bilingual deaf education* (pp. 54-73). Oxford/New York: Oxford University Press.

Schick, B. (2006). Acquiring a visually motivated language: Evidence from diverse learners. In B. Schick, M. Marschark, and P. E. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 102–134). Oxford University Press.

Sedey, A. L. (1996). *Speech intelligibility checklist*. Boulder, CO: University of Colorado.

Spencer, P. E. (2001). *A good start: Suggestions for visual conversations with deaf and hard of hearing babies and toddlers*. Washington DC: Laurent Clerc National Deaf Education Centre, Gallaudet University.

Stredler-Brown, A. (2010). Communication choices and outcomes during the early years: An assessment and evidence-based approach. In M. Marschark and P. Spencer (Eds.), *The Oxford handbook of deaf studies, language, and education* (Vol. 2, pp. 292–315). New York: Oxford University Press.

Stredler-Brown, A., and Johnson, D. C. (2001). *Functional auditory performance indicators: An integrated approach to auditory development*. Retrieved from <http://www.cde.state.co.us/cdesped/SpecificDisabilityHearing.htm>

Swanwick, R., and Gregory, S. (2007). *Sign bilingual education: Policy and practice*. Coleford: McLean Publishing.