

# SOUND CONNECTIONS

The importance of listening and spoken language early intervention for achieving age-appropriate listening, spoken language and social inclusion outcomes by school age

**firstvoice**  
THE FUTURE IS HEAR



# Creating listening & spoken language futures

First Voice is the regional body for centres providing listening and spoken language early intervention services for children with hearing loss in Australia and New Zealand.

Our member centres provide services to more than 1,500 children, more than 800 of whom are enrolled in intensive early intervention programs to achieve age appropriate spoken language before entry to school.

First Voice maintains a large data set on the outcomes of more than 500 children with hearing loss enrolled in its members' listening and spoken language early intervention services. This enables First Voice to conduct large-scale research to evaluate and improve services and outcomes for children with hearing loss.

This booklet:

- outlines the importance of achieving listening, spoken language and social inclusion outcomes by school age; and
- summarises the findings of a three year national research project into the language and social inclusion outcomes demonstrated by children with hearing loss enrolled in this type of intensive early intervention program.



## First Voice member & affiliated centres

- 1 **Telethon Speech & Hearing**, Western Australia
- 2 **Hear and Say**, Queensland
- 3 **The Shepherd Centre**, New South Wales and Australian Capital Territory
- 4 **Taralye**, Victoria
- 5 **Cora Barclay Centre**, South Australia
- 6 **The Hearing House**, New Zealand

# Achieving age-appropriate listening & spoken language by school age

## The impact of hearing loss on children

Hearing loss impacts on a child's listening, spoken language and literacy development, with long-term consequences for educational outcomes<sup>1</sup>, psychosocial health<sup>2,3</sup> and economic participation<sup>4</sup>.

Children with hearing loss often experience poorer outcomes than their hearing peers.

It is important for children with hearing loss to participate in evidence-based programs that are effective in addressing these outcomes<sup>5</sup>.

## Three critical early actions

The impact that hearing loss has on a child's life can be reduced by:

1. Early diagnosis of the hearing loss
2. Optimal amplification (e.g. through the use of cochlear implants and hearing aids)
3. Effective, evidence-based intervention being provided as early as possible<sup>5,6</sup>.

Access to sound during infancy and early childhood is critical to the development of age-appropriate speech and language and related brain development.

## Listening & spoken language early intervention

Listening and spoken language early intervention is an established program based on the principles outlined by AG Bell<sup>7</sup> for developing the spoken language of young children with hearing loss<sup>8-13</sup>.

This intensive early intervention program:

- uses a family-focussed approach;
- involves listening and spoken language specialists coaching the primary caregiver to facilitate their child's spoken language development through listening<sup>7</sup>; and
- involves setting individual goals for each child to enable the attainment of skills expected of typical hearing children at that age including listening, early communication, speech, language, social interaction, cognition, fine and gross motor skills<sup>7</sup>.

## Evidence based research findings

- Large scale research shows that children with hearing loss who receive listening and spoken language early intervention at First Voice member centres usually **reach age-appropriate listening and spoken language outcomes by school age**<sup>14,15</sup>.
- The findings also demonstrated that this group of children usually have comparable levels of social inclusion to typical hearing peers at school age<sup>14,15</sup>.



# Key elements of a listening and spoken language program

## A successful listening and spoken language early intervention service:

1. Combines the essential elements of: early diagnosis of the hearing loss; optimal amplification of the hearing loss (through hearing aids and/or cochlear implants); and listening and spoken language early intervention.

All First Voice member centres follow the philosophy of combining these essential elements to maximise the outcomes of children with hearing loss.

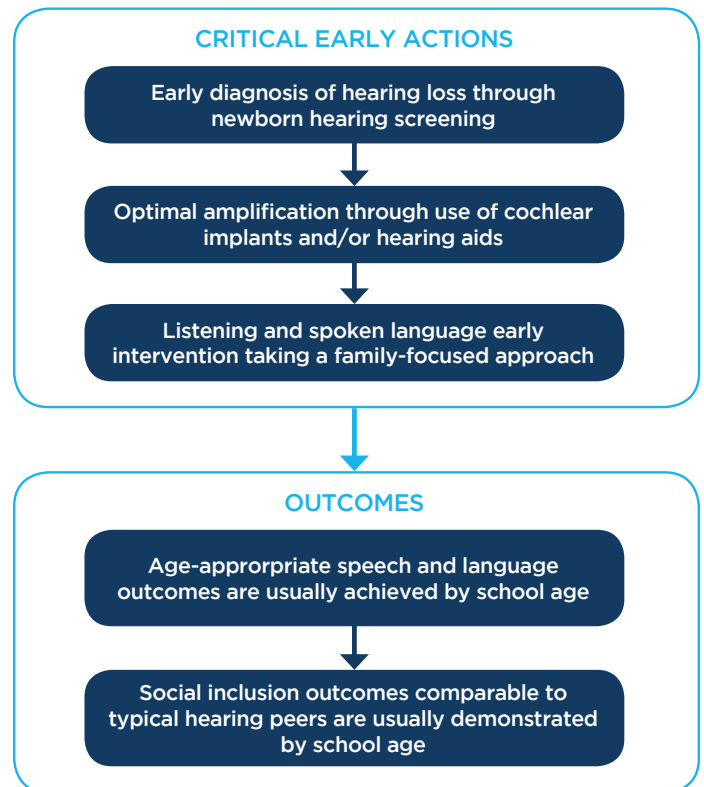
2. Achieves age-appropriate listening and spoken language outcomes in children with hearing loss by age 5 (school entry age) and demonstrates comparable levels of social inclusion to typical hearing peers.

A 2014 study by First Voice showed that children with hearing loss who received listening and spoken language early intervention at First Voice member centres usually reached listening and spoken language outcomes in line with their typical hearing peers by school age<sup>14,15</sup>. The findings also demonstrated that this group of children usually had comparable levels of social inclusion to their typical hearing peers<sup>14,15</sup>.

3. Demonstrates age-appropriate listening and spoken language outcomes consistently over time for the majority of children.

Using the First Voice data set on the outcomes of over 500 children with hearing loss in the early intervention services, First Voice tracks the yearly progress of the children. The outcomes consistently show that each year, most children are achieving age-appropriate outcomes<sup>16</sup>.

## Achieving listening & spoken language by school age



**Questions policy makers should be asking early intervention service providers when determining whether services are best practice for children with hearing loss:**

- Do you combine the essential elements of: early diagnosis of the hearing loss, optimal amplification; and listening and spoken language early intervention in your service delivery?
- If listening and spoken language is not the type of early intervention used, what type is?
- What evidence is there for this early intervention approach?
- What research outcomes demonstrate that children receiving your type of early intervention approach achieve age-appropriate outcomes by school age for listening, spoken language and social inclusion?
- Can you consistently demonstrate these age-appropriate outcomes over time for your service?

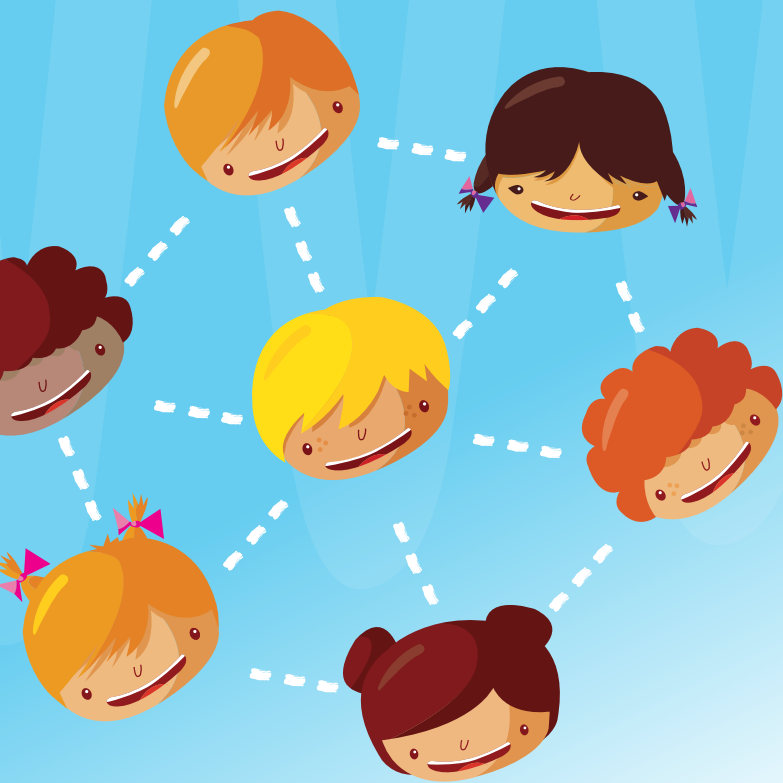
The research has shown that First Voice member centres provide listening and spoken language early intervention services that are ideal for families wanting their children with hearing loss to:

- listen and speak proficiently
- gain equivalent literacy and language skills to their hearing peers
- attend and participate fully in mainstream education
- form appropriate relationships
- attain the above skills needed to be independent members of society
- achieve positive physical and mental health outcomes.



# First Voice SOUND CONNECTIONS

A project investigating the outcomes of children with hearing loss enrolled in listening and spoken language early intervention



First Voice conducted a three-year research project (2011-2014) across its six centres to investigate the listening, spoken language and social inclusion outcomes of children with hearing loss who receive listening and spoken language early intervention. A Telstra Foundation Social Innovation Grant funded this project.

The project's goals were to:

1. establish the First Voice dataset for measuring listening and spoken language outcomes
2. evaluate the listening, spoken language and social inclusion outcomes for children aged 4-5 years.

## **GOAL 1: Establishing the First Voice dataset**

A First Voice database was developed collecting information from all of the First Voice member centres about the listening and spoken language outcomes of children with hearing loss receiving their service. The database contains data on 532 children with hearing loss aged 0-6 years and is updated yearly.

### **Implications:**

- This is the largest database for children with hearing loss receiving listening and spoken language early intervention in Australia and New Zealand
- Access to this large data set allows First Voice to conduct large scale research to evaluate and improve the outcomes of children with hearing loss enrolled in its members' early intervention programs.



## Goal 2: Evaluating listening, spoken language and social inclusion outcomes

The study evaluated the listening, spoken language and social inclusion outcomes of children with hearing loss enrolled in a listening and spoken language early intervention program.

### Social inclusion outcomes

#### *Developing a measure of social inclusion*

Established assessments were not available for measuring social inclusion in this cohort and a consistent understanding of what social inclusion encompasses was lacking in the literature. Therefore a literature review was undertaken resulting in the development of a novel framework to guide the measurement of social inclusion in this study<sup>17</sup>.

The framework of social inclusion consisted of five faces (perspectives):

- economic participation
- health and access to services
- education
- interacting with society and fulfilling social roles
- personal independence and self-determination<sup>17</sup>.

Using this framework a parent-report survey was designed to focus on two of the five 'faces' of social inclusion, being 'education' and 'interacting with society and fulfilling social roles'.

#### *Measuring the social inclusion of children enrolled in listening and spoken language early intervention at First Voice member centres*

The parents of 95 children aged 4-5 years completed the survey to investigate the relationship between the acquisition of spoken language skills and social inclusion. The results from the survey were compared

to the national Longitudinal Study of Australian Children (LSAC) dataset to benchmark the outcomes of children with hearing loss against their typical hearing peers.

### Findings:

Children with hearing loss receiving a listening and spoken language early intervention approach:

- usually demonstrated comparable, if not better social inclusion than typical hearing peers in relation to educational and social outcomes<sup>14</sup>.

The vocabulary and speech skills of children with hearing loss were found to impact on some areas of social inclusion, such as:

- primary caregiver satisfaction with the level of teacher support
- children being invited to social activities
- children using computer or mobile technology devices<sup>15</sup>.

### Implications:

- Children receiving listening and spoken language early intervention at a First Voice member centre usually demonstrate age-appropriate social inclusion outcomes prior to school age.
- This was the first study, to our knowledge, that investigated the social inclusion of children with hearing loss in listening and spoken language early intervention.

## Listening and spoken language outcomes

Listening and spoken language outcomes were analysed, using information from the First Voice dataset, for the 95 children whose social inclusion was assessed.

### Findings:

Children with hearing loss enrolled in listening and spoken language early intervention:

- were fitted with amplification devices and received optimal access to speech sounds essential to the attainment of speech and language, educational and social outcomes
- usually showed language, vocabulary and speech skills commensurate with typical hearing peers<sup>14</sup>.

### Implications:

- Children receiving listening and spoken language early intervention at a First Voice member centre usually achieve age-appropriate listening and spoken language outcomes prior to school age.

## Research Sponsor

First Voice acknowledges and thanks Telstra Foundation for its generous support of Sound Connections. We are delighted to work with a partner that shares our passion for fostering the social inclusion of all young Australians.



## Sound Connections Research Team



**Dr Gabriella Constantinescu**

PhD, BSpPath(Hons), Head of Research and Innovation, Hear and Say, Joint Project Leader, Sound Connections Research Project, First Voice



**Ms Aleisha Davis**

BA/Bas, MPhil, MSLP, LSLs Cert AVT Director of Clinical Programs, The Shepherd Centre, Joint Project Leader, Sound Connections Research Project, First Voice



**Dr Rebecca Phillips**

BAppSc (OccTh) with Honours, PhD Project Coordinator, Sound Connections Research Project, First Voice



**Assoc Prof Dimity Dornan**

PhD UQ, HonDUniv USQ, BSp Thy, FSPAA, CpSp, LSLs Cert AVT Executive Director and Founder, Hear and Say, Chair, Research Advisory Committee, First Voice

## References

1. World Health Organization. Deafness and hearing loss (Fact sheet No 300) 2013 [11 February 2014]. Available from: <http://www.who.int/mediacentre/factsheets/fs300/en/>.
2. Hogan A, Shipley M, Strazdins L, Purcell A, Baker E. Communication and behavioural disorders among children with hearing loss increases risk of mental health disorders. *Australian and New Zealand Journal of Public Health* 2011; 35: 377-83.
3. Hogan A, Phillips RL, Howard D, Yiengprugsawan V. Psychosocial outcomes of children with ear infections and hearing problems: a longitudinal study. *BMC Pediatrics* 2014; 14: 65. DOI: doi: 10.1186/1471-2431-14-65.
4. Access Economics. Listen Hear! The economic impact and cost of hearing loss in Australia. Melbourne, Australia: CRC for Cochlear Implant and Hearing Aid Innovation and Vicdeaf, 2006.
5. Joint Committee on Infant Hearing. Supplement to the JCIH 2007 position statement: principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *Pediatrics* 2013; 131: e1324-49.
6. Joint Committee on Infant Hearing. Year 2007 Position statement: principles and guidelines for early hearing detection and intervention programs. *Pediatrics* 2007; 120: 898-921.
7. AG Bell Academy for Listening and Spoken Language. Principles of LSLS Auditory-Verbal Therapy 2007 [8 December 2013]. Available from: <http://listeningandspokenlanguage.org/AcademyDocument.aspx?id=563>.
8. Dornan D, Hickson L, Murdoch B, Houston T. Outcomes of an Auditory-Verbal program for children with hearing loss: a comparative study with a matched group of children with typical hearing. *The Volta Review* 2007; 107: 37-54.
9. Dornan D, Hickson L, Murdoch B, Houston T. Longitudinal study of speech and language for children with hearing loss in Auditory-Verbal Therapy programs. *The Volta Review* 2009; 109: 61-85.
10. Dornan D, Hickson L, Murdoch B, Houston T, Constantinescu G. Is Auditory-Verbal Therapy effective for children with hearing loss? *The Volta Review* 2010; 110: 361-87.
11. Fulcher A, Purcell AA, Baker E, Munro N. Listen up: children with early identified hearing loss achieve age-appropriate speech/language outcomes by 3 years-of-age. *International Journal of Pediatric Otorhinolaryngology* 2012; 76: 1785-94. DOI: 10.1016/j.ijporl.2012.09.001.
12. Hogan S, Stoke J, White C, Tyszkiewicz E, Woolgar A. An evaluation of Auditory Verbal therapy using the rate of early language development as an outcome measure. *Deafness and Education International* 2008; 10: 143-67. DOI: 10.1002/dei.242.
13. Rhoades EA, Chisolm TH. Global language progress with an Auditory-Verbal approach for children who are deaf and hard of hearing. *The Volta Review* 2000; 102: 5-24.
14. Constantinescu G, Phillips RL, Davis A, Dornan D. Benchmarking social inclusion for children with hearing loss in listening and spoken language early intervention. Manuscript submitted for publication.
15. Constantinescu G, Phillips RL, Davis A, Dornan D. The impact of spoken language on social inclusion for children with hearing loss in listening and spoken language early intervention. Manuscript submitted for publication.
16. First Voice. First Voice 2012 Annual Report: Early intervention programs to assist children with hearing loss develop spoken language. Sydney: First Voice, 2012.
17. Phillips RL, Hogan A. The five faces of social inclusion: concepts of social inclusion theory and its measurement in children with disabilities. Australia: First Voice, 2012.

### SOUND CONNECTIONS NOTES:

*Data from standardized assessments are included for language (the Preschool Language Scale-4; the Clinical Evaluation of Language Fundamentals - Preschool 2nd Edition; or the Clinical Evaluation of Language Fundamentals-4), speech (the Goldman-Fristoe Test of Articulation-2), vocabulary (the Peabody Picture Vocabulary Test-4) and listening (the Parents' Evaluation of Aural/Oral Performance of Children; or the Categories of Auditory Performance).*

*The analyses in this study used unit record data from Growing Up in Australia, the Longitudinal Study of Australian Children (LSAC). The LSAC study is conducted in partnership between FaHCSIA, AIFS and the ABS. The findings and views reported in this document are those of the authors and should not be attributed to FaHCSIA, AIFS or the ABS.*

## Member & Affiliated Organisations



---

The Shepherd Centre  
146 Burren Street  
NEWTOWN NSW 2042  
T: 02 9370 4400 F: 02 9370 4499  
W: [www.shepherdcentre.org.au](http://www.shepherdcentre.org.au)



---

Hear and Say  
40-44 Munro Street  
AUCHENFLOWER QLD 4066  
T: 07 3870 2221 F: 07 3870 3998  
W: [www.hearandsay.com.au](http://www.hearandsay.com.au)



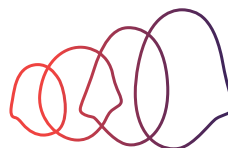
---

Cora Barclay Centre  
185 Melbourne Street  
NORTH ADELAIDE SA 5006  
T: 08 8267 9200 F: 08 8267 9222  
W: [www.corabarclay.com.au](http://www.corabarclay.com.au)



---

Taralye  
137 Blackburn Road  
BLACKBURN VIC 3130  
T: 03 9877 1300 F: 03 9877 1922  
W: [www.taralye.vic.edu.au](http://www.taralye.vic.edu.au)



Telethon Speech & Hearing  
Releasing children's potential

---

Telethon Speech & Hearing  
36 Dodd Street  
WEMBLEY WA 6014  
T: 08 9387 9888 F: 08 9387 9889  
W: [www.tsh.org.au](http://www.tsh.org.au)



---

The Hearing House  
251 Campbell Road, Greenlane  
NEW ZEALAND 1061  
T: +64 9-579 2333 F: +64 9-579 2310  
W: [www.hearinghouse.co.nz](http://www.hearinghouse.co.nz)