



The Functional Listening Index – Paediatric, which tracks the developing listening skills of young children with hearing loss, is a collaboration of The HEARING CRC, The Shepherd Centre and Cochlear Limited.

The Functional Listening Skills Index (FLI-P) as a Guide to Paediatric Rehabilitation

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WHAT IS THE FUNCTIONAL LISTENING INDEX-PAEDIATRIC (FLI-P)?

A tool for children with hearing loss from birth through to 6 years of age

- To measure and track the development of listening skills in everyday real life contexts
- Includes auditory skills required in every day listening situations including distance, noise, digital signal and subtleties of language conveyed through audition
- Based on stages of listening development (*See References & Acknowledgements)
- 6 phases, 64 items
- Early to advanced skills
- Beyond detection & discrimination
- Appropriate for children with:
 - all levels & types of hearing loss
 - all devices
 - all levels of social and family context
 - with/without additional needs & medical diagnoses
 - a primary language other than English
- Has been in use with 0-6yr old children with hearing loss in cochlear implant & early intervention programs since 2013
- Have now collected group and individual data with over 2000 data points for 500 children

- Statistical validation shows listening skills on the FLI at 3yrs are predictive of language skills at 5 years

WHY FUNCTIONAL LISTENING?

- Children's worlds are noisy places
- Communication needs much more than 'detection' and 'discrimination'
- Cognitive components of listening involving the brain, are key to communication development**
- Audiograms and speech perception testing cannot tell us how a child listens in daily life
- Understanding how children are using sounds in their everyday environments provides valuable information to guide the candidacy process



WHY PARENTAL INPUT?

- Learning happens best in a child's natural environment**
 - Parents and caregivers are the best ones to support this
 - Shaping & influencing every day interactions provides the platform for constant learning and integration
 - Tools such as the FLI-P can support parents to:
 - identify and seize listening opportunities in everyday life,
 - provide motivation, and
 - reinforce focus on listening skill development



Purpose of building The Functional Listening Index® Paediatric

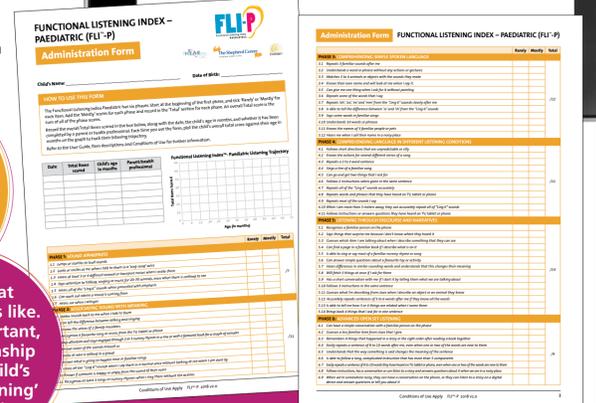
Only start to get clear language outcome information 3-4yrs
 Mainly information on sound detection, discrimination & identification; not use and integration

What do we know about using the FLI-P as a measure of functional listening?

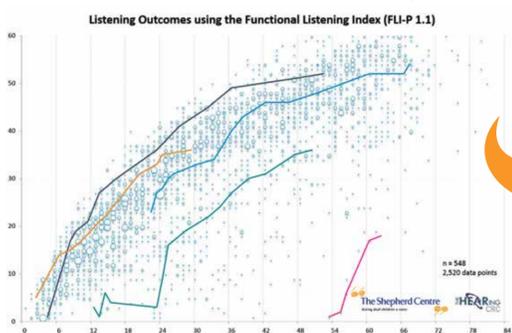
The impact of incorporating a functional listening measure to support decisions about amplification and intervention choices, through use of group data and individual trajectories
 Sensitivity of the FLI-P to context and situational changes
 Levels of concurrent, convergent and predictive validity

METHODOLOGY

- Retrospective analysis
- FLI-P data collected since 2013
- 2520 data points collected
- Analyzed listening outcomes
- Statistical validation
- 548 children in integrated early intervention and cochlear implant program across 3 states in Australia
- 178 now with CI



Various FLI Outcomes with Varied Aetiologies



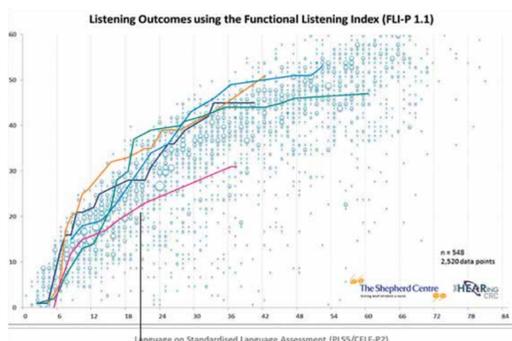
- KEY:**
- bilateral profound HL/ early CIs/ bilingual from birth
 - no CI; 70dB at 4k; dropped out of average range at CA2;
 - mod-sev; later CI, sequential; high input from parents can go backwards
 - bilateral ANSD implants at 23 months; showing FLIs
 - bilateral CIs very late, new Australian

'It's a really useful tool to see where my child is at with listening and to know if they're doing well' (Parent)

'This is what listening looks like. Why it's important, & the relationship it has to a child's everyday learning' (Clinician)

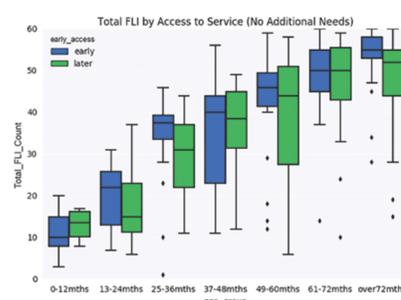
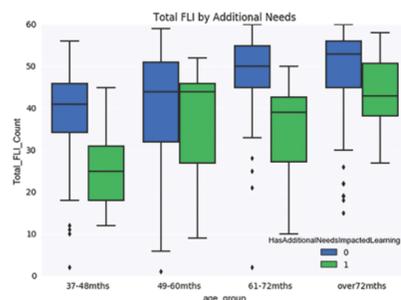
RESULTS

Changes in listening evident before drop in language assessment

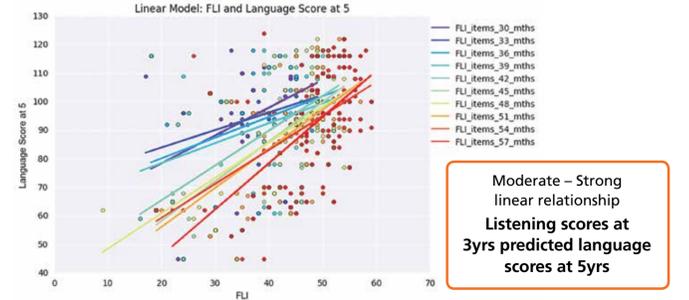


Child 5 (pink): Slow trajectory; queried at 21 months based on the FLI-P data (before drop in language scores on formal assessment)

Concurrent validity FLI-PTM Between groups: Additional needs & age of entry to EI



Predictive validity FLI-PTM Linear regression - FLI predictive of language scores at 4/5yrs?



Moderate – Strong linear relationship
 Listening scores at 3yrs predicted language scores at 5yrs

CONCLUSIONS

Functional Listening: a core component of amplification choice, cochlear implant evaluation & post-op progress

- The opportunity to bring a child's real world listening skills into candidacy considerations
- Quantify cognitive components of auditory skill development in a meaningful and contextual way for families
- Flexible, dynamic and adaptable to individual context and changing situations
- Responsive to multiple systems necessary for communication development
- Scalable and spreadable across needs and environments

References & Acknowledgements

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