FUNCTIONAL LISTENING INDEX – PAEDIATRIC (FLI™-P)

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Background & Development

The Functional Listening Index for Paediatric (FLI™-P) has been designed to assist the tracking and monitoring of a child's listening skills in everyday situations. It has been developed for parents, caregivers and health professionals to use with children from birth through to 6 years of age. It is based on clinical research conducted by the HEARing CRC and The Shepherd Centre since 2013. It has been developed as a clinical tool to guide both parents and professionals in the acquisition of a child's hearing and listening abilities, to support intervention, assist with goals and targets and inform amplification decisions. As listening is the foundation of spoken language and communication skills, tracking a child's early functional auditory skill development can assist in providing an indication of later language outcomes.

It has been developed from the formative auditory scales and tools in the field of paediatric hearing loss (see Acknowledgements).

It provides:

- a single scale that covers early to advanced listening skills
- a measure of listening for children from birth, with any degree, type and level of hearing loss
- a measure of listening that is relevant for children with additional needs and those learning languages other than English
- a comparative measure of listening skill development for children with hearing loss and with typical hearing
- a comprehensive list of early, mid and later developing audition skills
- a measure that can indicate how a child using their functional listening in every day environments
- a measure beyond the detection and perception of sound, that includes the cognitive components of identification and comprehension

The FLI™-P has been used clinically with children with all levels and types of hearing loss including unilateral and bilateral hearing, those diagnosed through universal newborn hearing of screening and those diagnosed later, children learning English as both a primary and additional language, and languages other than English, and children with additional needs. It is intended for use with any child developing listening skills.

For further information regarding validity studies and research base behind the FLI™-P, please contact enquiries@shepherdcentre.org.au

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Administration

Who can administer the FLI™-P?

It has been designed to be administered by a parent or health/education professional who knows the child well.

How do I complete the Functional Listening Index?

- Complete each set of questions to indicate the child's skill for each of the items, beginning at Item 1.1. Record the score, date of testing, child's age in months and who completed the index. Map the child's score on the FLI™-P listening trajectory chart to track their progress.
- If you are unsure on any item, refer to the 'Items Description' handout, which will provide more information on each listening skill

What do I need to remember when administering the FLI™-P?

- The FLI™-P is a measure of listening skills so it is important not to provide extra visual information unless otherwise indicated.

  Children naturally use all the cues they can to understand and communicate, and often this will involve visual cues, particularly in every day interactions. Because the FLI™-P specifically measures listening skills, it's important to ensure these aren't used. This includes pointing, gesturing, looking, lip reading and facial cues.

- Unless otherwise specified, items assume skills in a quiet environment, at a close distance, using a typical voice.

How often should the FLI™-P be administered?

The FLI™-P can be used both to establish current skills and to monitor development of skills over time. As such it should ideally be done every 8-12 weeks. If you are concerned about a certain aspect of listening or communicative development, this might be more often. It might also be at longer intervals e.g. every 6 months.

Regular use provides more information on each child's individual listening trajectory and progress.

Where do I start?

For your first use of the FLI™-P: Start at the first item (1.1). Keep progressing through the items until you have marked 'rarely' for 6 items in a row.

For all return uses of the FLI™-P: Count back 4 items from the first previous 'rarely' response. Check that the child is still 'mostly' doing the first 4 items, check any other items the child was rarely doing previously, and then continue until you have 6 'rarely' responses in a row.

Do I have to see the child perform each item in order to mark it off?

No. The index has been designed to be reflective of the child's current listening skills. As these can often change, think about what you have recently seen them do over the last few weeks.

What if I have only seen the child do it once?

You will be asked to indicate if the child 'mostly' or 'rarely' displays a certain skill. 'Rarely' indicates although you have seen it once or twice, it isn't something they do regularly. 'Mostly' indicates it's something they would most often do or frequently do, and you have seen them do it with different people, in different settings.

Do I mark 'rarely' even if the child never does it?

Yes.

What do I mark if I am not sure or think they do it 'sometimes'?

If you are unsure, mark the item as 'rarely'.

What do I do if I'm not sure?

The item description handout provides more information on types of things that you would see or look for, and suggestions of ways you can check.

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What are the basal and ceiling requirements?

Listening skills are often learnt by children in different orders, depending on experience and exposure to words and sounds. As you go through the form, even if they *'rarely'* do one of the items, they might *'mostly'* be doing items further down the list. Continue down the form even if you are recording that the child 'rarely' does some of the items. Once you record 6 items in sequence that are all *'rarely'* done (or aren't done) you don't need to continue any further.

Can I use the FLI™-P for a child with unilateral hearing loss? Auditory Neuropathy Spectrum Disorder (ANSD)? Large Vestibular Aqueduct Syndrome (LVAS)? Middle Ear Pathology? No hearing loss? Suspected hearing loss? Hearing or Processing concerns?'

Yes. The tool has been designed to use with children with all degrees, levels and types of hearing, however there may be certain considerations for each child's context. For example:

- Children with a unilateral loss who are not aided may have more difficulty with some items (localising sounds, listening in noise).
- Children with ANSD may demonstrate different skills at different times/on different days depending on the nature of the neuropathy.
- Children with LVAS may have lost skills if there has been a drop in hearing, and
- Children with middle ear pathology may have more difficulty or slower acquisition of skills during periods of effusion or infection. If you want to monitor their progress during periods of infection, then continue to administer the FLI™-P, otherwise, wait until the infection has resolved so you can measure the child's listening skills as they are in their usual listening condition with optimal access to sound.
- Children with no hearing loss or hearing/processing concerns may have different skills for many reasons. If you have concerns at any time regarding a child's listening skills, please don't hesitate in contacting your local GP or health professional.

If the child is using cochlear implant/s should I wait for their device to be MAPped prior to administration?

If you are concerned about their access to sound through their cochlear implant/s, MAPping is always recommended to optimise the signal and access, and then complete the FLI™-P.

If one or both of the child's hearing device/s are broken, should I still do the FLI™-P?

The tool should measure their skills when they have good access to sound, ideally bilaterally. As such, either answer the items with respect to what they were doing when their devices were functioning, wait until they are being used again or note during administration the status of the child's current device use.

Is it ok if the child keeps looking at my face?

No. Unless otherwise stated, the items are designed to monitor what the child can do through listening only, without the support of lip reading or other visual cues. Try sitting beside them rather than facing them, encourage them to look at something else or wait until they are looking away.

Why do we use animal and transport noises, rather than the real word?

These sounds (commonly known as performatives) are longer, contain more pitch and intonational information and have more repetitions built in than the real word. Consider the words 'cat' and 'meow'. Meow is longer, has more vowel information making it easier to hear and say, and is much more likely to be acoustically interesting. They are also used because they are fun, and more child-friendly!

Can I repeat the question or item if the child doesn't answer or respond the first time?

Although you can repeat it, it is unlikely you would mark the item as 'mostly' able to do the item, unless you see it many more times and on a consistent basis. The child should be able to do the item without it needing to be repeated or simplified.

If the child's primary language is not English, or doesn't use English at all, can I still use the FLI™-P?

As the FLI™-P measures listening skills, the language in which information is presented, is not important. What is important is whether the child is able to do the task through listening. Score the child for what they are able to do in their primary language, and use linguistic and language modifications as required.

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If the child speaks two or more languages, which language should I use?

You can try any or all languages spoken by the child. When the child has a certain skill in one language, it can be marked off. Note that the child may have some listening skills in one language and others in a different language. As the FLI™-P measures listening, and is not a 'language measure' this is appropriate.

Why does the FLI™-P use a TV, tablet or phone?

Listening to digital signals can be much more challenging than listening to a live voice. These items are used to monitor the development of these more difficult and advanced listening tasks. As these skills are such a daily part of listening & communication, and can be fundamental to participation and social inclusion, practice and monitoring of the development of these type of listening skills is important.

Does the child have to acquire all of the skills in one phase before continuing to the next phase?

No. In all cases, skills in the phases overlap and the development of skills is individual. There may be certain skills that are particularly difficult for some children which take longer to develop or may never achieve. They can continue to develop others further down the index.

How do I know if the child is doing what they should be for their age?

Normative data on the listening skills of children with typical hearing is currently in collection through a research project collaboration with The HEARing CRC, The Shepherd Centre, The Babylab at the MARCS Insitutute at the University of Western Sydney and Cochlear Ltd. This data will provide a range of ages where we would expect development of each item on the FLI™ for typically hearing children from birth through to 6 years of age. Until this normative data on the FLI™-P is available, information, information of when to expect listening skills can be found in the Integrated Scales of Development by Cochlear Ltd. (www.cochlear.com)

What do I do if I have concerns about a child's listening progress or development?

We would highly recommend you work with the child's health and education professionals to ensure they have the appropriate access to sound to develop listening skills for communication.

If you have any concerns about a child's listening progress or current auditory skills using the FLI™-P, please contact enquiries@shepherdcentre.org.au or alternatively a hearing professional near you.

Should I be using the child's 'hearing age', 'implant age', or 'chronological age?'

The FLI™-P has been designed to always use a child's chronological age. Although 'hearing age' refers to the time point at which aids were fitted, it can't be guaranteed this is the point that these aids provide useful information for the development of hearing and listening skills. This is similarly with 'implant age'. The date a child's implant is activated doesn't necessarily mean at this point that they have useful and good access to sound for the development of hearing and listening skills, as this happens over time with the optimisation of a child's MAP. Given the recognised standard measures for language development for children with hearing loss compare progress to normative data on typically hearing children, through chronological age, the FLI™-P has been designed similarly.

What do I do if the child can't do an item? Should I be teaching it to them?

The FLI™-P does provide a guide for the listening skills that the child will be developing next. Although we don't advise 'teaching to a test' (i.e. teach a certain item so they can mark off this item on the index), incorporating the next skills the child is rarely doing, are appropriate auditory goals to build into every day activities.

What is the evidence for the use and development of the FLI™-P?

Individual and group data analysis has been used since 2013. Numerous ongoing research projects are underway involving different uses of the FLI™-P. If you would like to participate in future research collaborations and developments using the FLI™-P, please contact enquiries@shepherdcentre.org.au

A FLI™-P training module is currently in development and will be available in the near future through HEARnet Learning (hearnetlearning.org.au). If you would like to be contacted when this becomes available please notify enquiries@shepherdcentre.org.au

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Glossary

Auditory memory: The ability to remember information that is heard.

Conversation: A conversation is a communication interaction between two or more people. All communicators should be responsible for maintaining the conversation so one person asking questions and the other just answering them is not a conversation. All participants should make comments as well as ask and answer questions.

Detection vs Identification: Detection means "they heard sound!" It does not mean that the child knows what the sound was or has placed any meaning with it. It is purely acknowledgement that a sound signal reached the brain. If a sound is identified, it must first be detected and then some meaning must be attached to it so it becomes "they know what that sound is"

Discrimination: The ability to hear the difference between two or different sounds. The child may not be able to hear them very clearly but because there are only a small number of options, they can tell which one is which.

Intonation: The rise and fall of a voice when speaking.

Highlighting: Similar to using a 'sing-song' voice. When speaking, add emphasis through volume (louder or whispered sounds), pitch (using pitch changes i.e. going from low to high to low pitch), duration (making a sound longer) or repetition to a word or sound when you say something to the child.

LING 6 sounds: The Ling 6 sounds (Ling 1976) are sounds that cover low, mid and high frequency speech sounds typically fall in between and around these, so if a baby/child can detect all 6 Ling sounds in a quiet place from 1 metre away, you can be confident they can detect all speech sounds under the same conditions (quiet, 1m away).

The sounds are: *mm, oo, ah, ee, sh* and *ss.*

The Ling sounds should be used regularly to check access to speech sounds, that the child's device is working correctly, and to help to identify hearing changes. The Ling sounds should be done both binaurally (both ears together) and for individual ears where possible i.e. left device only or right device only. If a baby/child is not responding to **all 6** sounds, we would recommend consulting an audiologist or hearing professional.

Listening alone: Without any visual, tactile or other cues.

Mostly: You are quite confident the child has the skill in question. They do it easily and frequently with different people and in different contexts.

Noisy place: A place where there is a lot of background noise that makes it harder for the child to hear what you are saying. Examples include a playground with children playing, a café or restaurant with conversations in the background, a preschool or classroom, a room with the TV or radio on in the background.

Quiet environment: A room or area without background noise. The TV is off, no noise from fridges/air conditioners/fans/people talking. The room or area has carpet/soft furnishings so there is no reverberation.

Rarely: The child is unable to do the task required or you are not sure if the child has consolidated this skill. They show the skill in question sometimes but not frequently or easily. The child may do the skill in question only in some circumstances or with specific people or in specific places.

'Sing-song' voice: Also sometimes called parentese/baby talk/infant directed speech. Has a high pitch, short sentences, lots of repetition and is used because it is more interesting to babies/young children, and is more likely to gain their listening attention.

Typical voice: One you would use when chatting with someone next to you. When measured with a sound level meter, between 60-65 dB SPL.

Visual cues: These are additional helpful hints to support listening that the child picks up through what they can see. They include gestures (pointing), eye gaze (looking at the thing you are talking about), pictures and lip-reading.

Visual cues are very helpful in natural communication situations where the listening environment is noise, unless specifically stated, they should not be used when doing the items in the FLI™-P as this tool was designed to monitor listening skills without visual support.

Visual cues in conversation: It would be unnatural to have a conversation without occasionally looking at the face of our communication partner to check on their comprehension. However, for the purposes of the FLI™-P, minimise the opportunities for visual cues by sitting next to the child rather than opposite. This way, they can glance at you but if the child needs to constantly look at your face it may mean they are relying on lip-reading, thus they are likely to be rated as 'rarely' for this item.

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FURTHER INFORMATION

For any questions on use please contact
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