

Young Peoples' Use of Wireless Technologies with Bone Conduction Hearing Implants

Imran Mulla¹, Zheng Yen Ng¹, Di Harbor¹ and Sue Archbold¹

¹ The Ear Foundation, Marjorie Sherman House, 83 Sherwin Road, Lenton, Nottingham, NG7 2FB

Introduction

Bone conduction hearing implant/device (BCHI) technology has developed considerably and the latest models of BCHI include streamers to help improve signal to noise ratios (SNR). In spite of the scientific evidence on the benefits of an improved SNR for teenagers (for example: Johnson, 2000; Brown et al., 2010), older children with hearing loss have reported limited uptake of wireless microphone technologies (Ear Foundation, 2014). The current study therefore proposed to explore the views and experiences of young people who own proprietary Oticon ConnectLine microphone/streaming devices that work with the Oticon Medical Ponto Plus. A mixed methods multiple case study design was employed with three young people (aged P1= 18, P2= 16 & P3= 11) and their families. Quantitative findings (COSI, GHABP, FM Listening Evaluation for Children) were significantly positive for all three young people. In depth qualitative analysis of data collected through initial interviews, daily diaries and final interviews resulted in four main themes and 23 sub themes. Some of these sub themes are discussed below:

Improved Listening

The young people and their families all described the improved listening opportunities the transmitter microphone provided with three sub themes emerging:

Main Themes		
Comprehension	Access to Speech	Control of Own Listening
P2 Mum: This has had good and bad points for me: first the good. during hospital visits we could have more private conversations as I am not having to speak loudly for him to hear, the bad point is he turns me off when not interested (P2)	P3 Teaching Assistant: I can tell she is getting the words because before when we were doing spelling and they weren't even anything like I'd said and I'd re-say it, she'd still say what she wrote down, so I thought is it the way I'm saying it, is it the way its coming through. But she has changed. And its little things, they're little should I say they're going gradually, daily, the smallest things but big in the whole of what she's doing or what she's achieving... Her spellings are coming on, even.	P1: I work in the workshop on Mondays and it's for about a six hour stretch, it's a lot easier to listen when I'm on mic. And I can just cut the rest out... Because quite often there's extra people in the workshop working machines. So with that in the background I can listen to him (tutor) so I turn on the mic and turn off the (hearing aid) microphones, all you have to do is hold down one of those two top side buttons and it eventually cuts them out. And you do the same to turn them back on again...

Engagement with Technologies

Connectivity with a wide range of everyday wireless devices was appreciated by all the young people and this was something they were able to take control of. This main theme had three sub themes:

Main Themes		
Improved Connectivity	Advantage over Hearing Peers	Control of Multiple Devices
P1: When online with my friend... I can also put this into just basic Bluetooth mode and connect it to the PS3 so it can function as a Bluetooth headset... The big fancy headsets won't work because my hearing is basically back there (pointing to mastoid) so... all I have to do is wear this round my neck, whereas they have to have dirty great headphones on their ears... It's a great help	P1: It's much better, it's so much easier. As I say with the messages she (Cortana, Windows Phone voice activation interface) can read them out to me through the streamer, so no one else can hear her ... I can make it so that I don't have to touch my phone at all to do anything when it comes to calls or texts or anything, I can tell her what to text as well.	P3 Mum: We have a Bluetooth radio in the car and it's great it just talks to it directly. She can hear it perfectly and she's really pleased. She was able to listen to music in the car then switch it me when talking to me... she understands better rather than having to keep repeat or asking "what?" (at home)... when the adverts were on TV she'd switched it over to mic and have a conversation and she was able to do that which was good because she was able to take control on her own.

Wellbeing

The benefits of incorporating wireless technologies into their everyday routines did not only lead to improved listening but as a result the young people and their families noted an improved sense of well being, for example:

Main Themes			
Social-Family	Listening Effort	Improved Confidence	Safety
P3 Mum: It must be working better because she wants to do more after school activities. Before she didn't now she wants to. P3Mum: She said in the car it was better was nice to have a talk I'm no longer on my own now. She said felt sometimes that she felt left out ...	P1 Mum: because you've asked him how its affected him, well that benefits us as well, and it definitely has, he seems much more connected, he's less isolated, spends less time on his own just kind of switching off which is what he used to do... it was such an effort to listen, such an effort to do all the listening and to concentrate all day that when he came home he just switched off.	P2 Mum: He used to give (mic) to the different Drs and nurses to use when talking... (although one seemed to think that she now needed to talk very loudly because she was wearing it!)... he could hear quite clearly what they were saying so he could answer the questions... because now he's 16 he had to answer them himself	P3 Mum: Went on the bike today was more fun as she was able move away with confidence...I was able to tell her watch out for things without shouting she said my voice was clearer as her helmet (without mic) took my voice away .I tried without but we stopped and started as she needed to see my face... you have to stop, look at each other sort of thing... now I can ride along and have a chat with her.

Practical Considerations

As with any technology practicalities of device use were observed and shared by the young people. This included feedback on the device itself and also on the practicalities associated with obtaining the technology and its use by others:

Main Themes			
Start Up Delay	Transmitter Battery Life	Lack of Initial Support (Try Before You Buy)	Advice to Others
P2 Mum: the only problem was if a Dr came along when it was switched off it did sometimes take a little time to pair up, and they would say what they had to say and then go. [P2] didn't want to ask them to wait until it paired, but hopefully over time he will as it is all still new to him	P3 Teaching Assistant: I put it on charge every night before I go home once we've finished. But if [P3] does an after school club I'm not here when she's finished... the only thing I find is the charging time doesn't seem to be long enough. A better battery life would be good because I think by 3 o'clock it's getting to that point where you're not getting as much.	P3 Mum: When I got given the streamer I got told about it and I got a booklet, but the only thing I could say is there was nothing to say how to go and get additional devices. Now I do know because they've got a big booklet at Connevens... but yes we could have that, we could have this, alright you have to go and buy it, but there's nowhere to go and try it.	P1: It has had a great impact, it's made everything so much easier. It's improved my ability to just listen to people, just hear people, so much more ease to it. I don't have to focus on anything I can just let it flow in, it's had a great impact... Don't rush it, always read the manual, make sure you understand fully how everything works and then what you can do with it is limitless. Read the manual!

Conclusion

Wireless technologies can provide a much needed option for young people with hearing loss to access a wider range of listening environments and devices that many of their hearing peers would have daily access to. The current study has highlighted when young people were provided with the correct support and advocacy on incorporating wireless devices with their existing hearing technologies, this can help them to take ownership for their listening in everyday situations. It is important to ensure young people are adequately informed of the device options available and are given enough information and support to maximise on these opportunities.

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Contact: imran@earfoundation.org.uk

