The Effects of Hearing Loss and Hearing Aid Use on Well-Being and Activity Levels

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Presenter: Brian Taylor, AuD; Jack Holman, PhD

Brian Taylor (00:00):
Hello, and welcome to another Signia podcast at AudiologyOnline. I'm Brian Taylor. Our topic today is the effects of hearing loss and hearing aid use on wellbeing. Today, with all that's happening with over the counter hearing aids and third party insurance contracts, so called TPAs, it is critical that we reframe the role of the hearing care professional. Rather than merely testing hearing and fitting hearing aids, I believe the primary role of the hearing care professional is to keep people socially active, mentally sharp, and connected to others, both in the workplace and at home. In this podcast, we examine the relationship between hearing loss, hearing aid use, and wellbeing. Granted, the term "wellbeing" is a bit fuzzy. "Wellbeing" is a term that can include physical activity, social activity, and emotional status.

Of course, those components of wellbeing are affected by things like listening, effort, fatigue, and hearing loss. Here today to help us break it all down and better understand the crucial role of the audiologist and the inpatient wellbeing is Dr. Jack Holman. Jack is a research fellow at the University of Nottingham Hearing Sciences Scottish Division at the Royal Infirmary in Glasgow, Scotland. Over the past couple of years, he's written, along with his colleagues, several excellent articles on the topic of wellbeing. There's a link to those articles in the notes that will be posted along with this podcast. If you're listening to this, you can download that document. You can follow and look at some of the articles that we referenced today. With all that, I want to go ahead and welcome Jack to the podcast.

Jack Holman (01:39):
Thanks for having me, Brian. It's great to be part of this.

Brian Taylor (01:43):

I've been excited to have you here. I've read, I think, most of the work of you and your colleagues in this area. I wanted to start by asking you to tell us maybe a little bit about yourself and what got you interested in this topic.

Jack Holman (01:58):
Absolutely. You've already given a pretty good description of who I am and what I'm doing right now. But I come from a psychology background. I initially was interested in abnormal psychology. My undergraduate work is on trichotillomania. That's compulsive hair puling. Actually, I just got a job doing research assistant work in the old Medical Research Council Institute for Hearing Research. There was nothing specifically about hearing research that interested me at the time. I just thought, "That's a good job." Over time though, I was dealing with multiple patients every single day. I found myself getting really invested in the personal life stories of each of the participants that came to do our experiments. As time went on and I got to the point where I decided, "Yes, academia is something for me," I realized that my interest wasn't so much just in the psychology aspect.

But actually, it was in the hearing sciences aspect. That's what really made me go out and search for something in that area. The topic of fatigue just seemed to marry my two interests really nicely. That's what my PhD was about, specifically it was listening fatigue and people with hearing loss. Over time, my interest has developed into generally wellbeing because as you mentioned, wellbeing encompasses all sorts of different things, fatigue being one tiny little part of that. Now my work is carried on from fatigue, I've been doing a project funded by the Hearing Industry Research Consortium on emotion. But now the Medical Research Foundation have funded me a fellowship looking at social and emotional wellbeing in people with hearing loss. That's generally how I've ended up where I am now.

Brian Taylor (03:45):

That makes sense. Looking at your work, I noticed the first few articles were more around fatigue. Now it's expanded into some of these areas around emotional wellbeing. That's interesting. I want to maybe look at the big picture here around wellbeing first. I really like how you described wellbeing in your 2021 international Journal of Audiology paper, where you describe wellbeing as a balance point between a person's resource pool and their ongoing challenges. Could you tell us a little bit more about what you mean by wellbeing as a balance point?

Jack Holman (04:25):
Absolutely. First of all, there's so many definitions of wellbeing out there. As I was stepping into it, that's one of the issues I faced, trying to actually pick the definition that best suited or best represented what I believe and what the evidence suggested we should be looking at. Part of that's because you can break it down in different subtypes of wellbeing, which you've already mentioned. You got physical, mental, emotional, and multiple other types of wellbeing. Generally, if you were to look for a definition, it would say, "Comfortable, healthy, and happy." But as you mentioned, there's a model by Rachel Dodge and colleagues in 2012 that I used in my IGA paper. It defined wellbeing as a balance.

You've got a balance between the challenges you face and your resources in overcoming them. Those challenges could be psychological, they could be social, they could be physical. Equally, your resources could be psychological, social, physical. To me, the important point is that positive wellbeing isn't so much about having a fantastic and trouble free life. It's actually about being comfortable and able to overcome the challenges based on the resources. That could be yourself and your resilience, or we could go into family structures, social support, all the way down to things like having a hearing aid that actually works for you. That's the way I like to think of it. That's the way I've represented it in my papers.

Brian Taylor (05:49):
What I like about that visual is that it helps you understand, as a hearing care professional, how your intervention can tip the scale, so to speak. That's cool. In that same IGA paper, I think you provide a helpful framework for understanding the links between hearing loss, hearing aid use, listening related fatigue, activity levels, and wellbeing. Granted, there's a lot to unpack there. I think it'd be helpful if you could maybe explain. Also, you mentioned there's some direct and indirect consequences of hearing loss on wellbeing. Help us unpack the difference between direct and indirect consequences of hearing loss on wellbeing.

Jack Holman (06:32):
As you say, there's a lot in that manuscript. I'll try my best to make this understandable as I work my way through it. Obviously, the main focus of that manuscript was listening fatigue. That was the core point. What I'm trying to do then is show that listening fatigue isn't as straightforward as having trouble in situations, having to put more effort in, therefore, getting more fatigue. What you do day to day, therefore, your wellbeing and how you feel are intrinsically linked. As you mentioned, hearing loss can impact intelligibility and listening effort. But when we think of fatigue, it's clear that what you do day to day has a large effect in the fatigue you experience. For example, you could have two people who have the exact same level of hearing loss.

One could be retired, doesn't go out much, just listens to the TV and stays in with their partner. Whereas, the other might work full time, have an active social life, do lots of hobbies. Therefore, they would experience very different levels of listening fatigue because of the daily life activities that they have. What I tried to do was introduce activity into this picture. I broke activity down into work, social and physical activity as the key components that you might think of. I looked at how that might impact fatigue. When I was talking about direct and indirect impacts in that manuscript, it's not necessarily the direct and indirect impact on wellbeing. It's more specifically on fatigue.

I'll get to that in a second because what I'll explain now is that there were several literature searches throughout this paper to try and create this complex picture that you saw when you read it.

The first literature searchers were looking at whether the changes in activity can impact fatigue. As you might, they do, which is really quite handy given that was the hypothesis. For example, work activity, as you might expect, you work more hours in a week, you'll get more fatigued. However, interestingly, if you are not at work, it depends on why you're not at work. Say, for example, you're retired. Actually, you have less fatigue. However, if you're unemployed and looking for work, you could have increased fatigue. There's interesting nuance to some of the arguments. But essentially, what we're seeing is there is a link there between activity and fatigue. Then what we wanted to look at as well was whether hearing loss and hearing aid use can then impact these activity levels.

Yet again, there's pretty strong evidence that hearing loss is linked to reduced work, social and physical activity. This would indicate that hearing loss can have an indirect impact on fatigue via activity levels. That is aside from the direct impact that we can see via listening effort changes. That was the jumping off point for me into talking then about wellbeing. The key aspect is understanding that each person's an individual with their own lifestyles and daily demands. Measuring hearing loss alone doesn't give an accurate idea of a person's difficulties or needs. Fatigue clearly can act as a challenge and a negative impact on wellbeing. We can more or less take that as a given. Reduced activity in quite a lot of circumstances can also influence wellbeing through physical health, negative emotions, and things like that.

Additionally, hearing loss itself can negatively impact wellbeing. If you get a diagnosis of hearing loss, that's obviously a bad thing. People could deal with that in very negative ways. Depression, for example, could lead to negative or reductions in

wellbeing. Also, dealing with the negative experiences in everyday life can create challenges. As we saw with our balance model, your resources, and your challenges, often these are psychological challenges that need resources to overcome. That's essentially where that manuscript got to via many different literature searches. I was trying to take the idea of listening fatigue and expand on it. But equally, we could take this idea with other issues related to hearing loss and probably come up with very similar answers as to how wellbeing isn't just impacted by the issue itself, but also the connected issues of all the different nodes of interest that are impacted by hearing loss.

I'll also mention just very quickly that amongst this, we saw that actually hearing aids can generally help this. Obviously, not as straightforward as that. There's different issues here or there. But hearing aids can be a force for good in terms of wellbeing.

Brian Taylor (11:21):
What I like about what you've written about and what you just said is the fact that it's well beyond the audiogram. You have to look more holistically at the patient. At the end, we'll talk a little bit more in a bit about some of the things you can do in the clinic to maybe tease these things out. But before we do, you've already mentioned some of the extensive literature reviews that you've done. I know that you and your colleagues have published a couple of different review articles, systematic review articles over the last few years that have examined the research that you've already touched upon in this area. That looks at the link between hearing, listening related fatigue and wellbeing, hearing loss and device use fatigue, those kinds of things. Could you maybe, Jack, summarize some of the key findings in your systematic reviews, highlight some of the key questions that you've asked in those review articles, and highlight some of your findings?

Jack Holman (12:13):

Absolutely. The key systematic review that I myself have conducted was like, as you said, looking at fatigue, hearing loss, and hearing device use. The main question, as you might expect, was whether there's evidence that hearing loss has a negative impact on fatigue in adults, pretty straightforward. The second question was whether hearing device use, and I said devices because we're looking at, not just hearing aids, but also cochlear implants. We would've looked at other kinds of hearing device, but actually, there really wasn't much out there. That's the extent of what we were able to look at. We were seeing whether there was a positive impact on fatigue. The main thing that I found was actually this, that the evidence base was not very large.

We kind of expected that. Obviously, before you do a systematic review, you're able to go out there and have a little quick search yourself. There's not a huge amount of evidence. Also, the studies that existed, while a lot of them used say questionnaires as their methodology, they didn't really match up very well. Not many studies used the same questionnaires as other studies. It meant that a meta analysis wasn't possible, which is a bit of a shame. But we were able to look at the results in a more simplistic way to try and tally up the positive results versus the nonsignificant results. Also, if there were any sort of refuting results, results that went against our hypotheses.

In a really basic sense, for our first question, the impact of hearing loss on fatigue, yes, there is definitely evidence there. There were 16 results that supported our hypotheses, eight that didn't show an effect, and zero refuted. Zero went in the opposite direction, which is helpful. When it came to the second question of whether hearing aids have a beneficial effect, there was far less out there. Four results supported, three had no effect, and zero refuted. General support there, but really not a huge amount of evidence to go on. Equally, if we delve into the manuscript that we found in this search, there were some interesting conflicting results. Some questionnaires looking at fatigue showed, "Yes, there's an increase in fatigue with people with hearing loss."

Others showed, "We didn't find that." We thought, "Why? Is that an issue with the questionnaire? Is it an issue with the population of use?" Because there were so many differences, it was really hard to parse that aside. Equally, some research looking at objective measures of fatigue didn't correlate with the subjective measures within the same study. You start to think, "Hang on, are we measuring the same thing here? Do questionnaires tap into the same thing that say objective measures of fatigue might tap into?" There's lots of doubt, essentially, not on the effect, but actually how we specifically measure what we want to measure. For me, this was the jumping off point of my PhD specifically. It's what got me started. You can see from the previous paper that we just talked about how some of the links developed from that systematic review.

Brian Taylor (15:15):
Exactly. I can see how it would be challenging to study when you get conflicting information like that. So far, what we talked about is your systematic review articles. But I know that actually, you and your colleagues conducted a study that was published, I believe, last year in Trends in Hearing. Your colleagues, Avril Dummond and Graham Naylor. In that study, you examined the impact of hearing aids and the impact they had on fatigue and social activity. I thought maybe if you could explain to us what questions you were trying to address in the study, then maybe a little bit about how you designed the study.

Jack Holman (15:55):
Absolutely. As I just said, as you touched on, this came directly from the systematic review. You'll be able to see where some of the links are with the wellbeing manuscript we talked about first of all as well. We know that there's evidence of hearing loss and increase of fatigue. However, exactly how that happens and how to measure, it's unclear. The evidence is a bit confusing at times. We wanted to know if fatigue changed after first ever hearing aids fitting. Rather than taking people with hearing aids and people without hearing aids or people with hearing loss and without hearing loss,

we actually looked at change over time. That's what we thought would be really interesting. There's obviously lots of individual differences.

Equally, as I'll get on at the end, once I discuss what this paper found, people might change what they do day to day. Actually, it's interesting to look at individuals across time rather than one group versus another group. That was really the main thing that we wanted to look at. We had people before and after first ever hearing aid fitting. Wanted to see whether fatigue changed, but also whether their activity levels changed, so social activity in particular. We also looked at physical activity and work activity as a rounded picture of activity. But social was the one that we thought would be really important given the nature of listening fatigue. In collaboration with Greater Glas & Clyde NHS audiology, we recruited participants who were about to receive the first ever hearing aids.

We followed them up at three post fitting time points. That was just after the fitting because we thought, "Once you get hearing aids, it's troublesome. You need to get used to that hearing aid. Maybe we'd see a potential increase in fatigue." Spoiler alert, we didn't. But that was part of the hypothesis. Then we measured people three months post fitting, then six months post fitting to try and see what the trend was over time. We had another control group, which was no change. People with hearing loss, some had hearing aids, some didn't have hearing aids, but the key was there was no change in their hearing aids status over time. They were our control to see actually what was happening across time. That was our basic design.

Brian Taylor (18:01):
Tell us, what did you find?

Jack Holman (18:06):
For me, this was a really interesting study. I don't want to blow my own trumpet.

Brian Taylor (18:11):
I think it is too. I agree with you.

Jack Holman (18:12):
There's some bits of this that I really were surprised about, actually. The first bit that I wasn't so surprised at was the fatigue, interestingly, given it was about fatigue. We actually used three different questionnaires to measure fatigue, given some of the issues we found in the systematic review earlier. One questionnaire looked at fatigue in a unidimensional general sense, "How have you felt in the past two weeks?" that kind of thing. Another was multidimensional, but again, general fatigue. It was looking at your fatigue as one dimension, as well as social fatigue, emotional fatigue, physical fatigue, but wasn't specifically listening fatigue. Then we had another questionnaire, which was the Vanderbilt Fatigue Scale. It was developed by Professor Ben Hornsby's group at the University of Vanderbilt.

That specifically measured listening fatigue. We were quite lucky because it was actually just developed by the time we were able to get our hands on it. I felt quite privileged to use that. What we saw actually was post hearing aid fitting, no change in the general fatigue questionnaires, but there was a beneficial change in listening fatigue, and quite a dramatic change as well. Probably something that we might have expected, but that's what came out. Moving on from that, though], as I said, we measured activity. What I was quite surprised at was social activity level increased post fitting. We can hypothesize that being the case, but to actually see a change was surprising for me. The two scales that we used to look at social activity, one looked at social activity in the past month, the other looked at your social activity in general up to the past year.

We saw a very, very quick increase in social activity using the more sensitive measure. Then the more long term measure, we saw an increase at the final six month follow up stage, which again matches the logic of what you might expect given what you're measuring. I found this really interesting, partly because there's this idea, we go back to direct and indirect impact on fatigue, if what you're doing day to day changes, then your fatigue level could potentially change. If we were to say your potential to be fatigued, call it say fatigue ability, if that were to decrease, if you then increase the amount of things you do day to day, you might actually plateau and stay the exact same level of fatigue.

That's a little hypothesis as to maybe why you don't see a change in general fatigue, non-listening fatigue. But again, that's purely speculation on my behalf at this point. It's not something that the study was designed to look into. But it's interesting because it gets you thinking about the relationship between something that you can measure in terms of fatigue, but also just your lifestyle and the differences between individuals. One other little thing that we found in this study was actually that listing effort improved. You had less listing effort after hearing aid fitting. The change in listing effort correlated to the change in listening fatigue. That's not to say that one is definitely driving the other, but they're strongly correlated.

Brian Taylor (21:23):
There's a relationship.

Jack Holman (21:24):
Absolutely.

Brian Taylor (21:25):

Is it fair to say from your study, I just want to circle back on one point that you made, that when you fit somebody with hearing aids, you saw an increase in their social activity pretty quickly out of the gate and then that was sustained six months on?

Jack Holman (21:40):
Absolutely. We didn't see a linear trend. It was more of a quick improvement that then plateaued, stayed more or less the same, which makes sense, I suppose. But equally, using the different measures, that supported the result there. Also, there was another question there we used to look at more of the psychosocial aspect of social activity. That also improved, again to support what we're seeing there.

Brian Taylor (22:07):
It's a really interesting study. Like I said, the links to all these studies are in the notes for this podcast. If anybody wants to dig into the details, you can find those studies at the links. The last study that I wanted to ask you about was published just in the last few months online, again at the International Journal of Audiology. That study looked at another component of wellbeing, emotional status experience by the... I guess I should say emotional states experienced by the individual. Could you tell us a little bit more about that study and what questions you were trying to answer in it?

Jack Holman (22:42):
Absolutely. This comes from the project that was funded by the Hearing Industry Research Consortium. Again, emotion was the key component here, but part of wellbeing, a quite intrinsic part of wellbeing, I think. We generally know that hearing loss is related to negative emotions in everyday life. There's research out there to show that. It's assumed that heating aids are beneficial. Some level of negative feeling towards them in certain circumstances, as we're aware. But there's little detail known or there was little detail known regarding the hearing and hearing aid related emotional states experienced by adults and how they occur. For me, the best way to look into this

was a semi-structured interview study, which means that we can ask the specific questions we want, but it also gives scope for the participants to lead us in areas we might not have thought about before. I did that and then conducted reflective and inductive thematic analysis to look into the data.

Brian Taylor (23:41):
Tell us what you found.

Jack Holman (23:44):
Again, I feel like I'm rambling about my studies here.

Brian Taylor (23:47):
No, that's why we got you on here.

Jack Holman (23:50):
This one I genuinely could talk about all day. I'll try and focus on some of the key points. Amongst the main findings, we actually looked at lots of little interesting other things. For example, Covid-19 was one of the things we looked into because we thought this would be really interesting because as I was gathering data, I was stuck in my house. Everyone was in flux. There were interesting things like that. That brought extra details that we weren't initially looking at. But there were main themes. The main themes that we found were identity and self-image, autonomy and control, personality and dominant emotional states, and the situational cost benefit analysis for the relation to the use of hearing aids.

If we take identity and self image, first of all, probably one of the largest, most overriding themes is this one. It was the identity of an individual, whether it's settled or unsettled, as a person with hearing loss in a hearing dominated world influenced emotions. Actually, in many of the other findings, you could actually see how identity

and self image would play a role. Hearing loss in general led to widespread feelings of social and emotional disconnection, sadness, depression, loneliness, isolation, things that we're all very aware are issues when it comes to hearing loss. These came out pretty strongly in this study. Equally, things like self-stigma actually were quite prominent. It's a view of oneself that caused negative emotions.

It was interesting because participants described feeling stupid, feeling old in situations, not wanting to annoy other people by saying, "Sorry, what was that you said? Excuse me?" They actually mentioned that was the case, even when they knew within themselves that the other people in the conversation probably didn't even think that way about them. It was an interesting juxtaposition here. People saying, "Other people will be annoyed at me." Then they say, "I know they probably don't think that, but..." Actually, it was almost the perception of one self and the self stigma towards your own hearing loss that was causing the behavior change and the negative emotions that came from that. I thought it was really interesting. It's just that the view of one self is the main issue rather than impressions.

Equally, the relationships with other people also played a part. When you're in a specific situation, how you know the person mattered in terms of the emotions you were going to experience in that situation in terms of struggling with your hearing loss. When people were with friends and family, people were able to be more open about their difficulties. They could say, "Excuse me, what did you say?" Even at times, laugh it off. Laughing about the hearing loss wasn't a negative in that circumstance more often than not. However, when you were with less familiar contacts, friends you weren't so close with or work situations, for example, far more examples of negative emotions as well as isolation, loneliness, and all those kinds of withdrawals that we see.

Moving on to identity. Again, the development of the hearing loss was very important because for each of our participants in this interview, we asked how they're hearing

loss developed. The people that had hearing loss that was from childhood or developed from an earlier age, there was generally more of a sense of acceptance. The negative emotions that came along with the hearing loss were far more muted, less important or less dominant in their everyday lives. People that had a progressive hearing loss seemed to exhibit fewer positive emotions and more negative emotions in situations. However, when people had sudden hearing loss, there was in general, I don't want to use the word "chaos," but it really threw a spanner into the works work.

Work life, home life, social life were disrupted. That could cause quite explosive negative emotions. It's almost that at a certain point, people have to reinvent themselves or create a new identity, not just as a person within their normal social circles, but as a person with hearing loss in these circles. That was really interesting to me. It was something I hadn't really considered much before. Just to move on, again, I'll try not to speak for too long about this, but it's a very cool study. There's control, the control in situations was very important. In general, the more control people have, the better the emotional experience. This includes not being able to utilize coping strategies. If you're in a situation where you're not able to situate yourself on the correct side of the speaker, get back to a wall, those kinds of things.

Actually, in situations like work, it's not always the case that you're able to use these coping strategies. Sometimes they're impossible. Sometimes you're even then leading people to use maladaptive coping strategies. That's withdrawing or completely avoiding social contact, for example, things that will lead to less negative emotions in the short term, but as we know can be very bad long term. We know about dementia, for example, and how reduction in social contact can lead to issues in that sense. Control, again, was one of those themes that really came through in a lot of different results that we found. Another aspect, again, looking at more of the social thing, the way that people interact with others, the blame that people put on was important.

When a conversation breaks down, if the person with hearing loss said that the blame was mostly with them because it was their hearing losses problem, there were muted emotions, not really that negative. They thought, "That's a shame, but I'll move on." However, when there was a breakdown to do with hearing loss, but the blame was attributed to the person they were speaking to, such as, "They're not facing me when I'm speaking. They're not taking into account my needs," far more negative reactions, far more negative emotions. A lot of them portrayed directly onto the person. You can understand how this might be. But really, some of the examples people used were quite dramatic in those senses. It wasn't always with family and friends.

A lot of times, it was with waitresses and waiters or people in work, where they think, "You know. I've told you about my difficulty. You just don't care." That was an interesting part to me. One last little thing I'll get onto before I move on, personality could explain some of the individual differences. There were little interesting bits that people mentioned. We didn't specifically ask about personality, but some people mentioned, for example, that they were perfectionists. They like things to be just right. They tend to be people who actually experienced more negative emotions in certain situations or more strong negative emotions, so annoyance, stress, and maybe even anger in situations. People who describe themselves as being homebodies, likely to stay home, not really liking to go out much, tended not to have that many issues, potentially because they're not experiencing these situations.

When we asked about Covid-19, they tend to be the people that said, "Covid-19 has not really changed my emotions much at all mostly because I'm quite happy staying in." That tended to come across. Finally, there was one male participant who expressed a real difficulty with emotion in general. They don't really engage well with emotions. They said essentially... I think the quote was, "I don't do emotions." That lends some support to the old stereotype of men and emotions. But again, this is purely speculative based on one participant. But it does open up that conversation at

least when we're talking about something like emotion. That's where I'll leave it just now.

Brian Taylor (31:32):
I think that this paper in particular, there's a lot of incredible insights that clinicians can gather from it around control, blame, personality. If clinicians are wanting to get at the root of what make people tick and their maladaptive behaviors, I think your paper in this area provides a lot of great insights on that. As we wind things down today, Jack, I wanted to bring this back into the clinical realm, all of your great work you and your colleagues have done in this area around hearing loss and wellbeing. If you could share maybe a few things around how you think audiologists should think about wellbeing and hearing loss, and maybe some things they can do to better address it in the clinic.

Jack Holman (32:24):
Absolutely. I'll just start this by pointing at again, I'm a researcher. I'm not a hearing healthcare professional. Everything that I say comes from my own personal point of view. I really admire all the audiologists and healthcare professionals that I work with because they've got such great insight. Actually, the research that they do, I think, is on an extra level because of that insight that they have. But from my point of view, I think you mentioned a key thing there, the talking. I think that is very important, to have an open discussion between healthcare professionals and patients. That's not just in terms of audiology and hearing healthcare. That's in terms of all healthcare because we know that fitting somebody with a hearing aid and sending them home is not going to optimize outcomes.

I think that's generally held, that's essentially the topic of this podcast. You're saying, "Actually, we're moving beyond that. We need to go to a more holistic approach." In terms of, again, not just audiology and hearing healthcare, but we know that the relationship between the patient and the professional is really important when it comes

to optimizing outcomes. Having not just a discussion, but an open discussion where somebody feels like they're able to talk about the different problems really will put you on good footing at least to start off with. In terms of wellbeing and the things that I've researched, it's not enough to look at individual things in isolation. We need to look at daily life activities.

Say we take fatigue, for example, I obviously think fatigue is very important. I believe it should be part of any conversation when somebody comes in and says, "I have problems with my hearing." But equally, looking at that by itself isn't enough. We need to look at wellbeing as a whole. That is just one little factor of that. Obviously, that naturally brings us onto measures. There are a ridiculous number of questionnaires out there, some aimed at the general population, some aimed specifically at people with hearing loss. It's not necessarily for me to point out and say, "These are the five questionnaires you should be doing every single session." There's a lot out there. Personally, I think a good idea would be if there was a core set, for example, of questionnaires.

Then for any individual, if you were able to identify the areas where they were particularly struggling, you could do something before and after fitting to see if there's any improvement in that. There are questionnaires out there which look at improvements such as the COSI, which is patient led. That is where someone can say, "These are the things that I would like to improve." Then you could say how they have improved. But equally, we're going at wellbeing specifically. There are questionnaires that could look at more of the social and emotional wellbeing. There's the Social Participation Restriction Questionnaire by Eithne Heffernan and colleagues actually based at the University of Nottingham as well. That's a great questionnaire. It's got two sub-scales.

It's a really good way of delving into that social participation, but more of the restrictions and the beliefs held by the person. If we were to look at wellbeing as a whole, there are, like I say, lots of questioners out there. But a recent one, which I find really interesting, is by Larry Humes. It's a subjective wellbeing questionnaire. I really like the questions that are in it. It's getting at quite a lot of these relational aspects as well, not looking at an individual just in terms of their hearing, but actually looking at how they interact with the world around them. Like I said, it's quite recent. I'm sure there's plenty of research lined up to look at it in terms of real world scenarios. But there's definitely lots of resources out there that hearing healthcare professionals could utilize.

Brian Taylor (36:10):
Do you have a specific name for the one that Larry...

Jack Holman (36:11):
Kind of leave it at that, for suggestions of mine.

Brian Taylor (36:11):
The one that you mentioned Larry Humes has developed, do you have a specific name for that one?

Jack Holman (36:14):
I believe it's the Subjective Wellbeing Questionnaire. If you search "subjective wellbeing" and "Larry Humes," it'll pop up.

Brian Taylor (36:23):
I think most of our listeners are aware of all of his work over the years and his renewed focus on auditory wellbeing that he's published on the last year or two. That's good to know. Jack, I don't want to take up any more of your time. I want to really thank you for

all of your expertise in this area. I think our listeners out there really appreciate the perspective that you have. How can people contact you if they have any questions about what you've talked about today?

Jack Holman (36:54):
First of all, thank you very much for inviting me along. As you can tell, I really like talking about these topics.

Brian Taylor (36:59):
We love to have that. Great.

Jack Holman (37:02):
I really like talking about this. I think it's very important. That's the main reason I like doing these things. But if people want to contact me, they can contact me at Jack.Holman@Nottingham.ac.uk. That's H-O-L-M-A-N, or on Twitter, which I use from time to time. It's @JackAHolman.

Brian Taylor (37:22):
That's good to know that you're doing all this great work. Hope to read more of your publications in the not too distant future. Thanks again for your time, Jack. Really appreciate it.

Jack Holman (37:32):
Thank you very much, Brian. Cheers.