

Podcast 8. Rebecca Millman. “What audiologists say matters: unintended consequences of wording and expectations in instructions for patients?”

This text is an edited transcript of a recorded podcast.

Hello and welcome once again to a ManCAD / British Academy of Audiology podcast. You might well know that ManCAD stands for Manchester Centre for Audiology and Deafness and that we are located at the University of Manchester in the UK.

I am Gabrielle (Gaby) Saunders. I'm a Senior Research Fellow at ManCAD and I moderate these podcasts.

We always try to address the topics pertinent to the practice of audiology but also want to make sure that they are relevant to researchers and anyone interested in hearing and hearing loss. Some of them are specific COVID related issues and others are more general considerations in audiology.

We will record a new podcast each month each one will be about 20-30 minutes long and we will post the audio recording along with a transcript on our University of Manchester webpages.

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<http://research.bmh.manchester.ac.uk/ManCAD/Podcast/>

Gaby: Rebecca Millman (Becky) from ManCAD is going to be discussing “What audiologists say matters: unintended consequences of wording and expectations in instructions for patients”. Becky is a Lecturer here at ManCAD. She's interested in listening effort and motivation. Before we begin our conversation, I will let Becky tell us about herself.

Becky: Thank you and thanks for allowing me to be part of this podcast today. I am a Lecturer in ManCAD and I have research interests in the psychology of hearing and how our brains respond to sounds that are important for communication.

Gaby: Today we are going to be talking about communication between audiologists and their patients. But I understand that you came to this from the perspective of instructing patients during testing. Can you tell what your thinking is and us a bit more about this?

Becky: I came to this topic from the perspective of the influence of motivation on how participants perform listening tasks. We do know that listening is often effortful for people with a hearing loss but even for people with normal hearing the effort needed to listen can become particularly apparent in background noise or in other difficult listening situations. For example, if you are listening to someone who is speaking with an unfamiliar accent. We think that the listening effort that individuals choose to put into demanding listening situations depends on their level of motivation and this is because effortful listening requires mental resources and motivation to invest these resources depends on the perceived benefit or reward. The decision to invest resources relies heavily on motivation; for example, when an individual is highly motivated towards a goal they will be more willing to expend the effort that is required. On the other hand, if someone is not motivated to use listening effort this might also explain why someone might choose to abandon a social gathering. For example, if the listening environment at a social gathering is too demanding or the conversation at that gathering is not very interesting, to the listener, then that person might think that it's not worth putting the extra effort needed to follow the conversation or may decide to leave that particular gathering.

Gaby: You talk about listening effort just now but I'm guessing that this applies in all sorts of things whether it's listening effort or effort to write an essay, or effort to exercising. Is that true?

Becky: Yes, I do think that listening effort could also be considered cognitive effort that could be applied in many different aspects of life. I think motivation plays a big role in the effort that people are willing to expend. Motivation can explain why people behave in certain ways. We know that motivation determines

the goal or goals being perceived and motivation can also modulate the intensity of behaviour or the amount of effort invested in behaviour. For example, from a different field, it's possible when you are in education either at school or higher education, you will probably be asked to write assignments and then get feedback on those assignments. Depending on your individual preferences, you might like to receive feedback that is written in a certain way and a certain type of feedback will motivate you to try even better in your next assignment and put more effort in to achieve a better mark. The feedback that motivates me as an individual might not be the same as the type of feedback that motivates you as an individual. Some people might like to see positive evaluation in the feedback they receive; other people would respond better to negative evaluations of their work and really pointing out where the weaknesses are in the work they submitted.

Gaby: So do you think that applies in listening effort too. The kind of feedback people get from the person they are listening to.

Becky: We know feedback does affect listening effort and motivation. The type of evaluation or the type of feedback that is given can affect the way that people expend listening effort.

Gaby: What are the theoretical principles then?

Becky: One very influential model in the field of listening effort is the Framework for Understanding Effortful Listening (FUEL). The FUEL is a model that describes the relationship between listening demands within a certain listening environment, listener's motivation and the amount of listening effort someone is willing to put in. The conceptual understanding and motivation outlined in the FUEL builds upon another theory of motivation, which is motivational intensity theory. A fundamental prediction of motivational intensity theory is that the effort investment is governed by resource or energy conservation principle. This means that people try to avoid wasting energy and therefore investing more effort than is required for successful task execution. When it comes to a listening task how do you as the listener know how much energy you should invest? One aspect of a listening task that can give you a clue as to how much energy you should be investing is the level of task difficulty. Typically, the greater the task difficulty then the greater amount of effort will be required. Your motivation to invest that effort will also determine how much energy you will end up investing.

Gaby: In a real world circumstance then, you might feel like it's important to hear what your Doctor says but really not care what your pal down the pub is saying? Is that what you are suggesting and that will dictate how much effort you put into a conversation.

Becky: The party example is one, which often used, to explain the relationship between listening effort and motivation. Imagine you are at a party, there is some level of background noise, and so as the level of background noise increases when more and more people arrive, you are involved in a conversation that you find particularly interesting. Let's say people are talking about the football match that was on earlier in the week. You as a football fan are very much interested in discussing the match. Even though you need to invest effort into that conversation to be able to follow it, you don't mind because you are so interested in the topic itself therefore you are motivated to put the effort in. Let's say you are at the same party half an hour later and the topic of conversation topic has turned to a play that somebody else at the party has recently seen and you are not very interested in watching plays or talking about plays. At that point, you lose the motivation to expend the effort and you switch off and stop listening to the conversation.

Gaby: Talking of research. It would seem that this is the perfect topic that one could apply when you are doing research on manipulating different variables and things. Manipulating what you tell people, manipulating motivation etc. Can you tell us about some of the audiological studies that have done this as part of their study design?

Becky: There are a few listening effort studies that have used mild deception, for example, manipulating task instructions. Some of these studies have enhanced how competent the participant or listener felt when performing the listening task. We think if a participant is made to feel more competent then this

may result in improved performance in certain listening tasks. A more specific example is a study by Bentler et al in 2003 where they used the same hearing aid but in a cross-over trial where there was nothing changed about the actual output of the hearing aid or the fitting of the device itself. It was just the shell colour of the hearing aid was changed. Participants were told that one shell colour meant they were listening to an analogue hearing aid and the other shell colour meant they were listening to an advanced digital hearing aid. The so-called digital labour effects led to significant difference across a variety of outcome measures, even though there was no actual difference between the devices or the way they were fitted.

Gaby: I recall when Ruth Bentler talked about this, she also said that because of the ethics, they had to debrief subjects and even when they were debriefed, there were individuals who insisted the hearing aids were different. Mind over matter and all that.

Back to clinical audiology. You obviously don't want to be tricking your patients, being untruthful with your patients, that would be the wrong thing to do. How should this be applied maybe in a clinical manner?

Becky: You might think that if you are a clinician, what you say to patients could not affect the way they perform on standard clinical tests such as pure tone audiometry or speech testing. The research in listening effort literature suggests that clinicians may inadvertently change the way that a patient performs on a test by changing the patients' expectations. We do know that, for example, the British Society of Audiology has written guidelines for many different audiological tests that are used in the clinic. An example would be that the BSA guidelines for pure tone audiometry contain a very specific set of instructions that should be read out to the patient before the PTA test starts. As a clinician, you would stick to those exact instructions and you would not deviate from what the BSA guidelines need you to say. But for other types of test, that are routinely carried out in the clinics, such as speech testing; as far as I am aware, the BSA guidelines for speech testing do not contain any explicit instructions for patients. Therefore, the clinician has to make their own judgement about what they should and what they should not say to patients before and during the speech testing.

Gaby: Give an example of some of the instructions you would expect to see a difference with?

Becky: There is a paper on listening effort by Hodgetts and colleagues. In that study they actually showed that the instructions they gave to patients before they started a standard speech test, it was the hearing in noise test. Hodgetts et al showed that the instructions given to patients before they started their test, actually affected their performance on the HIN test. Some of the participants were told that the HIN test was going to be difficult and they would have to try hard, the other half were told it was going to be easy and they wouldn't have to try too hard. Just by having those two different sets of instructions Hodgetts et al managed to measure differences on the HIN test in terms of the speech perception thresholds for the group who were given the difficult prime versus the group who were given the easy prime.

Gaby: In what direction?

Becky: So the people who were told it was going to be more difficult managed to perform better versus the people who were told it was easy.

Gaby: How much do you know?

Becky: It was 0.6 DB.

Gaby: That translates on a HIN test to around 6%. So what should we be doing in clinical practice?

Becky: I think both clinicians and researchers probably need to think carefully about what they actually say to participants before they start testing them and during longer testing sessions. Try and stick to the same set of instructions for all participants unless we really intend to manipulate what participants expect about the tests we are asking them to carry out. It is important to try to understand how motivation affects

us and especially for hearing impaired listeners who often tell us listening is exhausting and all they want to do when they get home at the end of the day is to take their hearing aids out. If we could better understand what motivates people to invest that extra effort into listening then that is something we could help our patients with.

Gaby: I have to say about the Hodgetts papers, that when they were told it was harder they did better. I find that really interesting because there is also this notion that you get to a difficulty level where you just give up. It just seems surprising that some people didn't give up sooner because they were told it was going to be difficult therefore maybe these experimenters don't expect me to do very well so I am not going to worry about it. To me it's counter intuitive.

Beck: It's a very good point. What you have to do, as a researcher, is to think hard of the difficulty level of your listening task. We know from motivation intensity theory that you need to make the task difficult but not too difficult so that the participants perceive it as impossible. It's really trying to get that balance between a task where there is room for improvement in terms of performance but not making it so hard that the participants just want to give up on the task.

Gaby: Any bottom line take away message for us?

Becky: My take home message would be that listening effort probably affects many audiology patients. It really would be great if we could understand more about the interaction between motivation and listening effort. Maybe we could do something to help people stop giving up on listening in difficult listening situations or even at the more extreme end, deciding to isolate themselves socially because they find that listening is such a burden in terms of the energy that it requires.

Gaby:

All it remains for me to do is say thank you for your time and sharing your thoughts. Thank you for this.

If the audience have any follow up questions, feedback or share ideas for future topics please contact me. You can send me an email. Gabrielle.Saunders@manchester.ac.uk

I hope you enjoyed this discussion and are going to come back to the next podcast. Until then farewell and stay well.

References:

- Pichora-Fuller, M. K., Kramer, S. E., Eckert, M. A., Edwards, B., Hornsby, B. W., Humes, L. E., Wingfield, A. (2016). Hearing Impairment and Cognitive Energy: The Framework for Understanding Effortful Listening (FUEL). *Ear and Hearing, 37 Suppl 1*, 5S-27S. doi: 10.1097/AUD.0000000000000312
- Brehm, J. W., & Self, E. A. (1989). The intensity of motivation. *Annual Review of Psychology, 40*, 109-131. doi: 10.1146/annurev.ps.40.020189.000545
- Bentler, R. A., Niebuhr, D. P., Johnson, T. A. et al. (2003). Impact of digital labelling on outcome measures. *Ear and Hearing, 24*, 215-224. doi: 10.1097/01.AUD.0000069228.46916.92
- Hodgetts, W. E., Aalto, D., Ostevik, A., & Cummine, J. (2018). Changing Hearing Performance and Sound Preference With Words and Expectations: Meaning Responses in Audiology. *Ear and Hearing, 40*(3), 615-620. doi: 10.1097/aud.0000000000000634