‘Getting used to’ hearing aids from the perspective of adult hearing aid users

Piers Dawes*, PhD

Michael Maslin, PhD

Kevin J Munro, PhD

School of Psychological Sciences

University of Manchester

Manchester, UK

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*Corresponding author. Present address: Audiology and Deafness Research Group, School of Psychological Sciences, University of Manchester, Oxford Road, Manchester, UK, M13 9PL. Tel: +44 161 3061758, Fax: +44 161 275 3373

Email address: piers.dawes@manchester.ac.uk

Abstract

Objective: To describe getting used to hearing aids from the perspective of adult hearing aid users. **Design:** Three focus group discussions were carried out. A topic guide and discussion exercises were used to elicit views on getting used to hearing aids. Discussion was audio recorded, transcribed verbatim and subjected to qualitative content analysis. **Study Sample:** Adult hearing aid users (n=16). **Results:** Participants described getting used to hearing aids as a multi-factorial process which included adjusting to altered sensory input, practical matters such as cleaning and maintenance, and managing the psychosocial impact of hearing aid use, such as on self-image. Users reported a process of discovering benefits and limitations of hearing aids leading to individual patterns of use that was relatively independent of input from audiologists. **Conclusions:** Getting used to hearing aids is a challenging multi-factorial process with both psychosocial and practical difficulties besides demands of adjusting to hearing aid input.

The challenge of getting used to hearing aids is widely recognised in both research and clinical practice (Mueller & Powers, 2001). Clinicians typically recommend that consistent hearing aid use is likely to result in greater benefit, and periods of time to allow for adjustment to amplification are routinely included in hearing aid research (Munro, 2008). Various aspects of getting used to hearing aids have been described in terms of clinical observations by audiologists and in hearing aid research (Brooks, 1989, Dillon, 2012). However, we are not aware of any study that specifically aimed to describe the process of becoming accustomed to hearing aids from the perspective of adult hearing aid users, and this was the aim of the current study. A systematic description of the process of getting used to hearing aids from the point of view of users would provide complimentary information to clinical and research views as well as enrich understanding by providing the point of view of the hearing aid user.

A range of issues faced in getting used to hearing aids has been reported by clinical experts and researchers, and these have been reviewed in detail, for example, by Brooks (1989) and Dillon (2012). Some of the first obstacles to overcome are a person's acceptance of hearing loss, understanding of the functional impact of hearing loss and recognition of the need and the usefulness of actively addressing hearing loss. There may also be reluctance to wearing hearing aids because of the stigma attached to hearing aid use; accepting hearing aids is seen as an admission to oneself and to others that one is old (Hétu, 1996). New hearing aid users may also need to adjust to altered patterns of sound input, particularly in the high frequency region, which may be annoying or aversive especially when using hearing aids for the first time (Palmer et al., 2006). Brooks (1989) emphasized the importance of physical fit and comfort, as well as the physical management of the hearing aid, such

as correctly inserting the ear mould and learning how to care for and maintain hearing aids (Brooks, 1985).

Commencing use of a hearing aid has psychosocial implications. For example, a person may have reduced self-confidence due to long-standing difficulties with communication due to hearing loss. Kricos (2006) suggested that counselling in conjunction with hearing aid use may be helpful in redressing this. In all the issues related to getting used to hearing aids that have been briefly mentioned above, the audiologist is seen as playing a key role in facilitating the rehabilitation process (Brooks, 1989; Dillon, 2012).

A recent tutorial article (Knudsen et al., 2012) emphasised the usefulness of qualitative methodology in audiology in order to understand the perspective of people with hearing loss. Several qualitative studies in audiology have been published on topics including stigma of hearing loss (Southall et al., 2010), impact of hearing loss on couple relationships (Scarinci et al., 2008), workplace self-efficacy and psychological well-being of professionals with hearing loss (Tye-Murray et al., 2009) and the experience of help-seeking and hearing rehabilitation programs (Laplante-Lévesque et al., 2012).

In the present study, focus groups were conducted with adult hearing aid users. Focus group methodology (rather than individual interviews) was adopted to capitalise on the strengths of focus groups in terms of efficiency of data collection and in being able to compare and contrast individual experience (Krueger, 1988). Tye-Murray et al (2009) assert that focus group discussion allows exploration of different perspectives, common ground or new opinion on the issue of interest. The

aim of the study was to explore the meaning of "getting used to hearing aids" from the perspective of adult hearing aid users.

Method

This research was conducted in 2012-2013 in Manchester, England. Ethical approval was obtained from the University of Manchester committee on the ethics of research on human beings and the NHS National Research Ethics Service.

Participants

Adult hearing aid users were recruited via a patient database. Inclusion criteria were i) aged at least 18 years old, ii) less than 24 months experience with a hearing aid[1], iii) have worn hearing aids at least once in the past three months, iv) able to communicate verbally in English. A total of 16 adults were recruited to the study.

Sampling was purposive, driven by maximum variation (Sandelowski, 2000) in order to recruit participants with a range of views regarding getting used to hearing aids. Specifically, recruitment aimed to include those who use hearing aids all day as well as occasional users, males and females, those living alone and with family, those who were very satisfied with hearing aids and those who had lower satisfaction, and had a range of occupations and educational levels. All participants had non-linear hearing aids and a vented skeleton or shell earmould. Characteristics of the sample are shown in Table 1. Hearing aid fitting had been carried out by various NHS[2] audiologists within a single NHS audiology department. A follow-up appointment took place approximately 3 weeks after initial fitting, in accordance with routine NHS

[1] This selection criterion was employed to select hearing aid users who have sufficient experience with hearing aids to provide a mature opinion about getting used to hearing aids, without first hearing aid fitting being so long ago that they may have forgotten the initial experience.
[2] National Health Service; socialised healthcare with provision free at the point of need.

hearing aid fitting practice (http://www.mrchear.info/cms/Resource.aspx?ResourceID=314). Briefly, the fitting appointment involved insertion of the earmould to check the quality of the fit, placing the hearing aid in or behind the ear, verifying the acoustic performance of the hearing aid in relation to prescription targets using real-ear measures (unless medically contraindicated), and subjective evaluation of the sound quality from the hearing aid. The audiologist also provided advice and counselling that included teaching the user how to operate, maintain, insert and remove the hearing aid. The user was advised to wear the hearing aids consistently and for as much of the time as possible during waking hours. Written information about the device as well as details of local support services was provided. The follow-up appointment involved adjustment of the hearing aid settings as necessary based on any difficulties described by the user, completion of a questionnaire-based hearing aid evaluation tool (such as the GHABP; Gatehouse, 1999), addressing and expanding on any points of advice regarding optimal hearing aid use that were either incomplete or misunderstood by the user from the fitting appointment, and assessing for any need of further follow-up.

(Insert table 1 here)

Focus group procedure

Participants took part in one of three focus group sessions lasting approximately 2 hours. The three groups consisted of 6, 5 and 5 participants, respectively. The number of participants in each group was limited to a manageable size for focus group discussion. A focus group size of 6-10 persons is judged optimal (Morgan, 1998). Our opinion was that a smaller size group may be helpful for facilitating

interaction with participants with hearing impairment. Organisation and conduct of the focus group was planned following published guidelines (Simon, 1999). The focus groups were conducted in a small, quiet and well-lit meeting room. Participants wore their hearing aids and were seated with the facilitator and the note-taker around a circular table to allow participation from all members of the group. The focus group was audio recorded with a digital sound recorder (Olympus digital voice recorder WS-560M). Focus group discussion was based on topic guide questions introduced by the facilitator as discussion progressed. Topic guide questions included:

- What are the biggest difficulties in getting used to hearing aids? What problems did you encounter? What were the easiest things about getting used to hearing aids?
- Let's say you have a family member or a friend who is starting to wear hearing aids. What would you tell them if they were to ask you about getting used to wearing hearing aids?
- How should clinicians counsel new hearing aid users about getting used to hearing aids? How should clinicians not counsel new hearing aid users about getting used to hearing aids?
- How can you recognize if you are used to hearing aids? How can you tell if you haven't got used to them?

Following piloting of questions with hearing aid clinicians, it was decided to use the phrase 'getting used to hearing aids' as it was thought that this terminology would be accessible to hearing aid users, allowing exploration of different understandings of what 'getting used to' may mean to participants.

Following a break, the facilitator introduced two discussion exercises. Exercises were based on those used in previous studies (Tye-Murray, Spry et al., 2009; Laplante-Lévesque et al., 2013). The first exercise consisted of statements by three fictional hearing aid users:

Mike: *"I wear my hearing aids all day."*

Garry*: "I wear my hearing aids, but only for certain situations."*

Lisa*: "I have hearing aids, but I don't use them."*

Participants were then asked to describe what getting used to hearing aids had been like for each person. In the second exercise, participants were shown a picture of a fictional hearing aid user with the caption "Mary has just got new hearing aids". Participants were then asked to describe what Mary might experience over the next few days, weeks and months after she starts using her new hearing aids.

At the conclusion of the focus group, participants completed a short demographic questionnaire and a hearing screening test following recommended procedures (British Society of Audiology, 2004).

Analysis of the focus group transcript

Focus group audio recordings were transcribed verbatim by a professional transcriber. As a quality check, the first author (PD) checked the transcript against the audio recording. Qualitative research software NVivo9 (www.qsrinternational.com) was used for analysis of the focus group transcript. Analysis was based on qualitative content analysis (Graneheim & Lundman, 2004; Knudsen, Laplante-Lévesque et al., 2012). In this approach, analysis is driven by the research question and the data themselves, rather than any *a priori* theoretical

framework or hypothesis. Analysis proceeds firstly by identifying concrete content (i.e. what participants say) and aims to give an overall description of the data. Analysis may be extended (as in this study) to include identification of thematic content, which may be based on data across descriptive data categories.

Focus group content was divided into meaning units – a discrete set of words, sentences or paragraphs that are related by their content and context. For example, the meaning unit "*At the beginning I definitely had that. It was a couple of days and I thought 'I'm not going to cope with this'. It was a foreign body literally in my ear which didn't feel awfully comfortable*" was coded as 'Hearing aid comfort' (concrete content), which was later grouped under 'Practical use' (thematic content). Relevant meaning units were identified on the basis that they relate to an aspect of the research question, i.e. 'what is the experience of starting to use hearing aids from the perspective of the user?' or 'factors that support or hinder getting used to hearing aids'. All parts of the transcript that related to either of these content areas were identified as meaning units and assigned a code which reflected the content of the meaning unit. No pre-defined codes were applied, rather as analysis proceeded, codes were created as required to describe all parts of the content. A single meaning unit may have one or more codes associated with it, depending on the number of different concepts contained within that meaning unit. In all, 651 separate meaning units were coded across the three focus groups. The first author (PD) identified and coded all meaning units. Two authors (PD and MM) then reviewed and discussed each meaning unit, revising coding where appropriate. A third author (KJM) who had not been involved in the initial coding process independently coded 20% of the transcript. Discrepancies were used to refine the coding schema. This initial process resulted in a collection of concrete categories, such as 'Hearing aid comfort' and

206 ‘Manipulating hearing aid’ with associated meaning units grouped under each
207 category. Two authors (PD and MM) then grouped concrete categories under a
208 smaller number of thematic categories. For example, the concrete categories
209 ‘Hearing aid comfort’ and ‘Manipulating hearing aid’ were grouped together under the
210 thematic category ‘Practical use’. All authors discussed and reached consensus on
211 the themes which were identified.

212 Saturation refers to the ‘adequacy’ of collected data in capturing a full range of
213 opinion, and is akin to ‘statistical power’ in quantitative research (Morse, 1995).
214 Saturation involves data collection until no further ‘new’ information is added. To test
215 for saturation, the content identified by each of the three focus groups was
216 examined. After the first focus group, 24 separate concrete categories had emerged
217 (96% of all the categories identified). The second focus group resulted in only one
218 additional category (4%), while the third and final focus group did not generate any
219 new categories. This is consistent with saturation; it is unlikely that additional focus
220 groups drawn from the same pool of participants (i.e. adult hearing aid users
221 recruited via the NHS in Manchester, England) would have resulted in any new
222 categories.

223 **Results**

224 Table 2 shows the areas of content that were identified, each organised according to
225 the two-level system of categorisation. At the first level, concrete content (i.e. what
226 participants said) is identified. Concrete content is then organised under a second
227 level of thematic content (i.e. the overarching idea). One thematic category
228 (‘Annoying sounds’) was not associated with more than one concrete category, and
229 one thematic level (‘Re-defining self-image’) was associated with two further sub-

categories ('Managing stigma' and 'Increased confidence'). Verbatim quotes are provided for illustrative purposes, below.

(Table 2 here).

Annoying sounds

In commencing hearing aid use, the first experience reported by participants was that background sounds that had previously been inaudible or quiet were now amplified to levels that were intrusive or distracting. In response to a question about the biggest difficulty about becoming used to hearing aid use, one participant replied "*The battery of noise. My first experience was walking out of* XXX *Hospital and hearing very, very strange noises that I realised were my feet. And my car, which I thought was as good as a Rolls Royce, was making one hell of a racket. Switches going click, indicators going - terrible. It was a bombardment of noise*" (P5). Another participant described a similar experience; "*The only thing that bothered me is when I walked out of the hospital with it on the first time. There was a load of people, and the noise, I was going out the door, I was actually hurrying up to get out*" (P11).

An initial experience with loud background sounds was a common report among participants, and it was described in strongly aversive terms including "*oppressive*", "*weird*", "*a dreadful cacophony*" and "*overwhelming*". Participants reported that within a few days of consistent hearing aid use, this experience moderated to the point where background sounds once again sounded natural or no longer were experienced as being bothersome; "*I think it's getting used to small sounds. … we have a very old fridge that even without my hearing aids I could hear it knock itself on and knock itself off again. What I didn't realise is that after it knocks itself off I could hear a hissing sound, and it drove me mad. I was really looking round. And*

then it dawned on me that sound must have always been there. I just hadn't heard it. At first it was really frustrating because I didn't associate it with my hearing, I associated it with a noise that's coming from somewhere. As I say, when it dawned on me that the small things were because I hadn't heard them before then it was fine" (P13). Another participant said "*I'm sure my brain filters out noise. I'm sure it does. 'Cause otherwise I wouldn't have got used to them to the point where I sometimes wonder if they're working*" (P2). Yet another participant reported that "*It might take a little while to get used to the different sounds of it, because your brain does have to adjust to the fact that you are hearing more and to be able to select what you're hearing*" (P16).

Some participants reported that it was necessary to wear the hearing aids consistently in order to adjust to amplified background sounds; "*If he's not wearing them, when he puts them in he's going to find the noise and things that we found at the beginning and it's going to take him a lot longer"* (P9). Additionally, if for any reason hearing aids were not worn for a period of time, the problem with 'annoying sounds' would return; "*then it's the whole thing of the noise again, the whole noise issue which you sort of – you get used to*" (P2).

Distorted sounds

Some participants reported a feeling of having blocked ears, similar to congestion associated with a head cold ("***Occlusion effects***"). Other participants reported that certain sounds – such as one's own voice and noises of chewing and swallowing – sounded unnatural; either loud and booming or distorted ("***Unnatural sound***"). However, this was not a universal experience and some participants reported that they never experienced these problems. For the participants that did experience

initial difficulties, some reported that these had lessened over time. For others, the effects remained problematic: "*Had the same sort of feeling as you get when you've got a cold…..And that's remained – the noise of my own voice is not natural any more. Even though I'm getting a little bit more used to it, it's echoing around my head when I talk"* (P3). This participant reported that continued discomfort associated with distorted sounds were one reason why he did not choose to wear his hearing aids continuously; *"I don't really feel adjusted to that and I don't want that to be my whole day's experience.*"

Practical use

Participants reported that becoming used to using hearing aids involved learning how to manage and maintain their hearing aids. These practical issues amounted to a significant challenge to becoming comfortable with hearing aid use and integrating hearing aid use into daily life. Participants identified several practical issues that they were required to come to terms with.

Initially, ***hearing aid comfort*** was problematic. For some people, the ear felt sore, warm, itchy or sweaty. Generally, these feelings of discomfort reduced with use; "*At first I kept thinking god, am I allergic to this thing in my ear?*" (P8). "*It was a couple of days and I thought I'm not going to cope with this. It was a foreign body literally in my ear which didn't feel awfully comfortable*" (P2). Most participants reported that hearing aids become more comfortable with use, to the point where they would not be noticed by the wearer. "*I think when you first put them in they feel enormous and they feel as if they weigh a tonne. But with practice and use you get used to it and they gradually get down to size*" (P12).

Another practical challenge was that of "***Remembering hearing aids***", or integrating hearing aids into daily routine. This might involve remembering to put them in; "*The biggest initial difficulty was just remembering to put it in. And I got into the habit of – my routine in the morning I get up, do whatever I did as I got dressed and put my makeup on, I put my hearing aid in so I – it did have to become part of my routine*" (P4). Alternatively, remembering to remove hearing aids for occasions such as bathing or going to bed were initially problematic until a reliable routine was established.

Physical manipulation of hearing aids (***Manipulating hearing aid***) in terms of putting the hearing aid in and out of the ear also required some practice for some participants, although others reported no difficulty from the beginning of use. Some participants reported realising that the hearing aid would produce feedback if not inserted correctly; "*The difficulty I had originally was that I wasn't putting it in far enough because I'd get lots of squeals and squeaks. People would say is that your phone? and I was 'no, it's this'*" (P14).

Cleaning and maintenance of hearing aids was a concern of some participants; "*And I found that I started to get funny echoing sounds if I don't have that – if I don't unplug that* (indicating the hearing aid wax guard)" (P2).

Managing batteries was also an issue for beginning hearing aid use. Participants reported that they learnt by experience how long to expect battery life would last, the warning signs of a dead battery, the need to carry spare batteries and the best places to acquire replacements. Correct insertion of batteries was also something that required some familiarity.

Experimenting with use

A significant challenge for beginning hearing aid use was discovering the benefits and limitations of hearing aids. Participants reported that they underwent a process of trial and error, working out for themselves those situations or ways of using a hearing aid that would be most beneficial for them and adjusting their usage accordingly. One participant described this as "*Understanding how they work, how they will benefit you and how you'll manage that benefit*" (P1). Another said "*I think you work out what your own needs are*" (P2). For some people, this meant wearing hearing aids virtually all day, while others found they only wanted to use hearing aids in specific situations only. One participant said that he had found that hearing aids were "*absolutely essential for certain aspects of my life and totally superfluous for others*" (P6). Another said "*They become a tool. When you need it, you pick it up and use it*" (P1).

Examples of how participants experimented with hearing aids included developing behavioural strategies to maximise hearing aid benefit, and using (or not using) hearing aids in specific situations. For example, one participant reported ***trying unilateral and bilateral amplification*** in a challenging listening situation; "*I've tried wearing either/or hearing aid* (meaning the left or right hearing aid) *when I go out for dinner to restaurant or a crowded place. And I've tried wearing both. I wear – I thought maybe here wearing both would be better and to some extent I think it is. I think you get more of a surround sound that you can then beam out* (the background noise)" (P3).

Specific listening situations

Some participants reported developing ***listening strategies*** that optimised aided listening. One participant gave an example of sitting with his back to a wall to

minimise the sources of noise in a crowded café. Another suggested choosing restaurants with good acoustics and low levels of background noise; "*I wouldn't go in. I don't go in any more unless the place has proper acoustics*" (P13).

Other examples of experimentation with hearing aid use were in relation to specific listening situations. Several participants reported that they did not wear hearing aids at the ***cinema***; "*Sometimes, when I go to the cinema, I do not take my hearing aid because the film, if it's an action film, it's just too loud"* (P1) or else removing the hearing aid for the commercials before the film and putting the aid back in for the main feature. Use at the cinema might depend on the specific type of film; "*If it's dialogue I always take it*" (P1). Participants reported a similar situation with listening to ***music***; some participants reported that they used hearing aids for some musical listening situations but not for others; when describing a loud live concert, one participant said "*I put them in so I could understand every word they were saying ….but I didn't need it. That's the only time I have ever taken them out*" (P4).

Another example of how getting used to hearing aids involved learning to use them effectively was with the ***telephone***. For some people, this involved putting the phone to the unaided ear, while for others this involved careful positioning of the phone over the hearing aid microphone. One participant reported that effectiveness of listening depended on which particular telephone was used. One participant reported being able to use other electronic devices more effectively; "*Well, with having so much talking technology I want to hear what's going on when the microwave talks and the computer and everything else*" (P14; referring to voice notifications used by electronic devices, such as kitchen appliances and computers).

In some cases, experimentation led to hearing aids not being used for specific situations, such as working with noisy tools or doing housework. In these cases, hearing aids were not worn because participants had discovered that hearing aids did not provide benefit or that the hearing aids amplified aversive noise.

Psychosocial factors

Participants reported that getting used to hearing aids involved a range of psychosocial adjustments and challenges, both positive and negative. One challenge was ***managing the stigma*** attached to hearing aid use; "*I think it was because I didn't want to appear to be in that category of people who needed aid with their hearing. In other words, I'd got into the old person category. And I think I was resisting that. I think that psychologically I wanted to be like everybody else. I didn't want to be sticking things in my ears and having walking sticks and all that sort of thing, you know. I wanted to still be a young man. And the time comes when you've just got to admit*" (P1); "*I think it is, well, it certainly is for me, it is another step of getting older. I think that's an admittance in a sense*" (P10).

Some participants felt embarrassed to wear hearing aids, because they felt that hearing aids are regarded as a sign of disability or incompetence; "P13: *I don't think people accept other people's infirmities…They'd have to go out of their way, their normal routine or interface with people, to please you or not, and it's too much of a nuisance, and they think here comes that silly old bugger, he wears a hearing aid.* P12: *Well you* (meaning people in general) *tend to think that anybody that's slightly disabled in whatever way isn't quite all there don't you?"*

Participants reported that coming to terms with the stigma of hearing aid use involved recognition and acceptance of hearing loss and hearing aid use, ultimately

re-defining one's self-image; "*The other thing I would say is don't be sort of ashamed of it or reserved about it. The fact is everybody more or less has got the problem. You don't worry about wearing glasses. But I know a lot of people are quite reserved about sort of 'fessing up that they've got these hearing aids in*" (P3). "*It doesn't matter what you think about me, I'm wearing these things, I need them*" (P14) and "*it's just become part of who I am*" (P2).

For other participants, the impact of hearing aids on self-image was positive and resulted in ***increased confidence***. Two participants reported that prior to having their hearing aid, they had worried that communication difficulties they were experiencing signalled age-related cognitive declines; "*I didn't think it was 'cause I was deaf. I thought it, well, my brother has Alzheimer's, you see, and I thought, 'oh'. I really, really went through a stage – 'cause my brother's had Alzheimer's for 12 years – and I really went through a stage of thinking that's what was happening to me. I didn't realise it was me ears really*" (P4). Following hearing aid use, these participants realised that their communication difficulties were primarily due to hearing loss. Using hearing aids has resulted in a revision of self-image; "*I think I thought I was getting old, getting really old when I first realised that I couldn't hear very well. One of the things that's changed, having hearing aids, is that I realise I can still hear things, it isn't my brain that's getting old or getting lazy, it's that I can now hear what's being said. That was amazing for me*" (P2).

In a similar vein, participants also reported that hearing aids provided a boost to self-confidence and increased opportunities for participation. Some participants reported that prior to beginning hearing aid use, they had been avoiding certain situations that they knew that would be troublesome for them; "*I stopped really and truly going out anywhere in company, in parties, anything, because I couldn't communicate"* (P4); or

that they felt excluded in social situations; "*I would miss sections of the conversation, and after a while you get to the stage where you don't join in because you're not sure of what's being said, so you don't want to make a fool of yourself by saying something. So I found that I tended to feel quite isolated*" (P8). Following hearing aid use, "*I could put it in and have the confidence of knowing that I was going to be able to hear*" (P2); and "*For me it's made a difference. Just psychologically maybe it's made a difference. I don't feel so cut off from other people*" (P8). Interestingly, one participant reported that increased confidence in one's own communication abilities transferred to situations even when the participant wasn't wearing her hearing aid; hearing aids had given her the expectation of communicative success.

Some participants reported that hearing aids had facilitated participation in novel activities and increased opportunities for participation ("***Broadened experience***"). For example, one participant described how she was now able to use internet-based video conferencing to talk to grandchildren travelling overseas; "*Now I enjoy talking to them when they're in Paris or wherever they want to – wherever they're going. And it's brilliant that the – I love listening to them now. And that is, to me, a big thing 'cause I miss them sometimes when they're out of the country*" (P4). In a discussion exercise, when asked to describe what the experience of 'Mary' (a hypothetical new hearing aid user) would be like after beginning hearing aid use for the first time, one participant stated "*She'll have her horizons widened*" (P2).

Finally, some participants reported hearing aid use had required a ***re-negotiation of communicative interactions***. Some people realised that they were now speaking more quietly than before, and this had impacted on dynamics of daily communication. One participant, speaking about his wife, said: "*Since I've got the*

aids she said, "You're now speaking far too quiet. I can't hear you." So I said, "You need deaf aids" (P6).

Others realised that their mode of interaction was different; when talking to his wife, one participant described: "*There was an occasion when she actually said to me, "Are you listening to me?" And I said, "Why? I'm listening, I can hear everything you say." "But you're not looking at me." What we worked out was that I'd always looked at her when she was talking and I was partially lip reading. And she thought I was ignoring her. But I could hear….. I found it quite interesting*" (P1).

Other participants described how they felt that they actually did more listening in communicative situations, whereas previously they were more likely to do the talking. Using hearing aids meant that because they could now listen successfully, they now listened more, and this had altered the dynamics of communication. Participants commented on the fact that obtaining hearing aids had instigated discussion among friends and family about communication, and that this had also altered patterns of communication. "*People have said to me since* [getting hearing aids], *'I never realised that you couldn't hear very well'. And I was – I've been amazed that they didn't realise 'cause it was an effort for me to hear them*" (P2).

Factors that moderate getting used to hearing aids

Participants explicitly identified the factors in this section as being a help or hindrance to getting used to hearing aids (Table 3).

(Table 3 here)

Acceptance of hearing loss was an issue that was identified as a pre-condition to successfully getting used to hearing aids. Prior to starting hearing aid use, some

participants reported that they had not realised that they had any hearing difficulty. Friends or family had suggested that the participant have his or her hearing tested, and there was initial reluctance on the part of the participant to accept that he or she might have a hearing problem; "*It's one of those things that you don't want to admit to. You just think that everybody else is talking quiet and it's not you*" (P8). Experiencing a restoration of audibility and benefit provided by hearing aids served to affirm the presence of hearing loss and increase acceptance of it. "*Hardly anybody would say, 'I'm deaf,* (so) *I'm going to have something done about it without being told.' So we probably went a bit reluctantly. But we've all sort of said, 'yeah, it's been great'*" (P1).

Participants also reported that they believed that ***consistent use*** was important to adjust to hearing aids; "*There is that initial having to get used to it, I think. If you wear it all the time you just adjust"* (P2). One participant reported that gradually building up use had helped her get used to hearing aids; "*Keep them in as long as possible each day. If you can't do it, keep it – you know, go another hour, another hour, another hour. … And that's how I did it"* (P4) ("***Gradually build up use***").

Participants reported that this required a degree of ***determination*** and commitment on their part. When asked what advice they might give a new user, one participant said "*I think you need a certain amount of dedication and determination when you first start wearing them*" (P2). Another participant agreed; "*I would say persevere with it. Don't just get your hearing aid and put it in a drawer. Just keep wearing it*" (P9).

Some participants reported that they did not have much external support in beginning hearing aid use but had managed well on their own. Others reported that

the support by friends and family had been helpful ("***Encouragement from others***"). The positive reactions by others to hearing aid use had been an encouragement to continued use; "*My grownup children –I've got grandchildren and great grandchildren – but the grownup ones, you know, when they come and they talk – they say it's brilliant to be able to talk to me"* (P4). One participant reported that a good relationship with their audiologist had also been helpful ("***Good relationship with audiologist***"). The participant described how she had found the audiologist sympathetic, warm and considerate, and that she felt she was more likely to persist with the fitting and the subsequent post-fitting follow-up appointment because of this. "*And you've probably only met twice but it's, hello, Mrs X or what. I thought she was very nice, yeah. I think it made it a lot easier going to see her ….. if I dislike you I don't think I would have turned up the next time"* (P4). The convenience and quality of service was another important factor; "*I haven't been kept waiting. I've been able to drop in if I'm puzzled or I need something or I've lost one. I've always been treated with courtesy and a smile, and this isn't always the case these days is it? And also useful information I really found it first class*" (P13).

Participants reported that information about hearing aids, both in terms of practical issues such as maintenance as well as information about what to expect from hearing aids and the process of getting used to them would be helpful ("***Provision of information***"). "*For the first couple of weeks I think that would be the time when you think oh I'm not wearing this, it's driving me mad. Whereas if they said to you that you might experience this, but persevere with it, and probably in a week or a couple of weeks it'll stop or you'll get used to it. So I think a little bit more information in the beginning maybe would stop people thinking to themselves oh I can't cope with this or there's something wrong and stop wearing it*" (P8).

Discussion

The aim of this research was to describe the process of getting used to hearing aids from the perspective of hearing aid users. The process that users described was multi-factorial and involved diverse challenges including adjusting to altered sensory input, dealing with practical matters associated with hearing aid use, discovering the benefits and limitations of hearing aid use as well as negotiating the psychosocial impact of hearing aid use, such as on self-image. This broadly agrees with and provides validation for descriptions based on clinical observation and research studies (Brooks, 1989; Dillon, 2012).

Annoying sounds

'Annoying sounds' – background noises amplified to intrusive levels – was the first experience that participants reported, and this was ubiquitous. The strong, negative way in which this was described (e.g. "*dreadful cacophony*") suggests that this was highly aversive, and represented a significant challenge for new users. This initial experience may discourage new users to the extent that it may be a primary reason for disuse. However, participants reported that with consistent hearing aid use, this experience moderated rapidly to the extent that background noises were no longer intrusive within a week of hearing aid use. In research studies, acclimatization to hearing aids is thought to take several weeks or months (Munro, 2008). Accordingly, follow-up appointments for new hearing aid users may be scheduled after a period of a few weeks (Mueller & Powers, 2001). In the present study, participants reported that the highly problematic experience of 'annoying sounds' moderates with the first few days of use, provided that hearing aids are worn consistently. It may therefore be useful for future studies to consider the utility of scheduling a follow-up

appointment or phone call with a new hearing aid user within the first few days following fitting. Clinicians may then be able to support new users through this initial challenging stage of adjustment.

Practical use

'Distorted sounds' also were problematic for some participants. Experiences with distorted sounds may relate to occlusion effects, and continued difficulties with unpleasant sensations consistent with occlusion were a reason for inconsistent hearing aid use for one participant. Other reports of distorted sound may relate to alterations in sound quality, such as may occur with frequency-specific amplification provided by hearing aids. Some participants reported that the experience of distorted sound reduced over time, and this may be related to adjustment to altered sound quality similar to that which takes place with 'annoying sounds'. Reasons for variability of experience of 'distorted sounds' was not a subject of investigation for the current study, although it is likely to relate to individual differences in patterns of hearing loss, amplification, range of listening environments and ear mould design (Dillon, 2012).

Given the number of issues discussed, management of practical matters associated with hearing aid use was a primary factor in getting used to hearing aids. Participants reported that they had to learn how to clean and maintain hearing aids, manage battery replacement and integrate hearing aids into daily routine. Some found that the comfort of fit was something that also improved with time. Taken together, practical issues associated with hearing aid use represent a significant challenge to the new hearing aid user (Brooks, 1985). Obstacles with any one of these single practical issues may prevent a user from continuing to use and benefit from hearing

aids. Adjusting to the practical demands of hearing aid use might be facilitated by good hearing aid design and support; i.e. making use as easy as possible, follow-up appointments to address practical problems, and providing support material in the form of written instructions, DVD or internet instructional videos (Dillon, 2012). Participants in this study did receive such support as part of their hearing aid fitting. It is interesting that participants still reported management of practical matters associated with hearing aid use as being challenging despite provision of support in the form of counselling, written instructions and follow-up appointments.

Experimenting with use

Another strong theme to emerge was that of 'experimenting with hearing aid use'. Participants described how they had tested hearing aid performance in various listening situations and had adjusted their use according to each person's individual experience and needs. Brooks (1989) recommended that advanced hearing aid features such as directional microphones and telecoil may require explicit instruction by the audiologist to the user in order to obtain maximum benefit. Teaching of active listening strategies and techniques to boost communication - such as watching the speaker's face, ensuring foreknowledge of the topic of conversation, minimising noise and reverberation – are also recommended (Dillon, 2012). These strategies are routinely discussed during NHS hearing aid fitting appointments. Although advice was provided, it was striking that users described the process of 'experimenting with hearing aid use' as something undertaken relatively independently and on the basis of trial and error. On one hand, it is encouraging that users are able to experiment and discover ways of maximising hearing aid benefit themselves. However, a danger may be that for some users, an individual process of experimentation could lead to mal-adaptive usage patterns or non-use. For example, a new user may be

590 discouraged with hearing aid use in general after finding limited benefit in a particular
591 situation (e.g. in a noisy bar). Individual experimentation with hearing aids may lead
592 to a pattern of use where the hearing aid is only used for particular situations where
593 the user finds them beneficial (as for some participants in this study). Such users
594 may be highly satisfied with their hearing aid despite only occasional use (as
595 observed by Laplante-Lévesque et al. 2012) although this seems at odds with clinical
596 opinion that consistent hearing aid use is likely to lead to greater hearing aid benefit
597 (Palmer et al., 1998; Mueller & Powers, 2001).

598 *Psychosocial factors*

599 Hearing aid use resulted in adjustments in habitual ways of thinking. One issue was
600 that hearing aid use forced a re-evaluation of self-image. This may involve
601 assimilating the stigma associated with age-related hearing loss and hearing aid use,
602 or a positive boost to self-image in restoring confidence in communicative ability.
603 This is in line with both positive and negative aspects of psychosocial adjustment
604 previously reported in hearing aid users (Hétu, 1996; Saunders & Jutai, 2004).
605 Hearing aid use was reported to have broadened the horizons of participants in
606 terms of increased opportunities for participation, both in familiar social settings and
607 with novel experiences (such as internet-based video conferencing) (cf. Lockey et al.
608 2011). Hearing aid use also altered the dynamics of communication, with familiar
609 patterns of interaction with friends and family having to be re-negotiated, sometimes
610 via explicit discussion (cf. Scarinci et al. 2008).

611 *Acclimatization to hearing aids*

612 'Auditory acclimatization' is defined in research literature as improvements in aided
613 performance over time as the user adapts to altered patterns of auditory input

(Arlinger et al., 1996). Perceptual measures of acclimatization have included speech perception, intensity discrimination and loudness perception (Munro, 2008), and research evidence for auditory acclimatization is inconsistent (Palmer, Nelson et al., 1998; Turner & Bentler, 1998; Dawes et al., 2014). In the present study, participants did not report any systematic improvements in aided speech recognition as a feature of their experience of becoming accustomed to hearing aids. A possible explanation is that if they do occur, auditory acclimatization effects may be gradual, small on average and limited to higher levels of input (Turner and Bentler, 1998; Munro & Lutman, 2003, Dawes et al., 2014) and thus may not be noticeable to users. Users may have been more focused on the procedural aspects of adjusting to hearing aid use (such as cleaning, changing batteries and inserting the hearing aid) so that more subtle acclimatization effects (if they do occur) may not have been noticed. Users were not specifically asked whether they experienced improvements in aided speech recognition that could be consistent with acclimatization, and this may be a reason they did not report them. However, a specific methodological aim of this study was not to ask any such leading questions that could bias participants' reports.

Factors that moderate getting used to hearing aids

Participants identified various factors that they felt had facilitated getting used to hearing aids. One such factor was an acceptance of hearing loss, and this was recognised as a pre-condition for acceptance of hearing aids and subsequent hearing aid use (cf. Southall et al. 2010). Acceptance of hearing loss may relate to the issue of adjusting self-image, as described above. Participants also reported that successfully getting used to hearing aids required consistent hearing aid use, determination and persistence on the part of the user. Supportive friends and family were seen as helpful (cf. Meyer & Hickson, 2012). Participants suggested the

provision of specific information regarding getting used to hearing aids would likely be helpful, as this may make new users more likely to persist with what can be a challenging experience. Factors that facilitate getting used to hearing aids such as those described by participants in this study have been identified by audiologists (Brooks, 1989; Dillon, 2012). In these descriptions, the audiologist is seen as playing a central role in auditory rehabilitation by facilitating such support and having close input into all of the issues described above to do with getting used to hearing aids. In this study, it was striking that participants did not report that the audiologist had much input into the process of getting used to hearing aids. Some participants did report that a good relationship with their audiologist had been helpful, although this seemed to relate primarily to the initial dispensing of the hearing aid, rather than via an on-going therapeutic relationship during the course of getting used to hearing aids. Participants in this study did receive support in the form of counselling concerning hearing aid care and use, listening strategies, provision of written support materials and follow-up appointments for problem-solving. One possible reason that users did not report input by their audiologist as being important in getting used to hearing aids may be difficulties in assimilating the large amount of information imparted by the audiologist at the time of fitting and subsequent follow-up appointments (Margolis, 2004). Strategies that may help address this information overload may include using simple language, limiting the amount of information presented and reiterating the most important points, providing written materials for the user to take home (Margolis, 2004), ensuring that the user's 'significant other' is included in the fitting and follow-up appointments, on-going availability of support in the form of an in-person clinical drop-in service or via tele-audiology (Laplante-Lévesque et al., 2006), and support groups for new users.

Perhaps the most important reason why users did not report input by their audiologist as being important in getting used to hearing aids may be because they were not specifically asked about the role of the audiologist. The focus group discussion was structured to avoid any leading questions, as the goal was to identify which issues participants themselves would report as being significant. It may be that the structure of the discussion with its focus on the participant and their own personal experience led to identification of issues intrinsic to the participant, so that the importance of external factors (such as audiological input) was minimised.

A further possibility may be that user's expectations concerning the role of the audiologist are a limitation. In a recent study that aimed to characterise optimal hearing aid use from the point of view of audiologists and hearing aid users (Laplante-Lévesque, Jensen et al., 2013), users identified that the hearing aid itself was the most important factor in achieving optimal use. In contrast, from the point of view of audiologists, a good user-audiologist relationship was most important. It may be that users understand audiological services mainly in terms of hearing aid provision. Laplante-Lévesque et al (2013) suggested that addressing the expectations of the user concerning the service they expect from their audiologist may be helpful. If users expect their audiologist to assist in facilitating hearing aid use and effective communication, i.e. to provide services beyond merely supplying and fitting hearing aids, they may be more receptive to their audiologist's efforts in this respect. The expectations of users may be addressed directly by explicitly explaining the range of services available beyond hearing aid provision and fitting. Educating the community concerning the broader role of the audiologist in facilitating effective communication may also be helpful in the longer term.

Limitations

The study adhered to recommended practices for qualitative analysis, such as provision of contextual detail concerning the sample and details of the data analysis, inclusion of commentary on the data illustrated by verbatim quotes and independent coding used in the data analysis. The primary limitation of this study is that participants were all older adults with hearing impairment consistent with age-related hearing loss, and received audiology services within the NHS in the Northwest of England. Themes identified by this group may not be transferable to other populations, although the fact that they are generally in line with those previously identified in audiological literature suggests that they are. One might expect that findings may differ in particular populations, such as younger adults and children, those from minority groups and in other countries.

Conclusion

From the perspective of adult hearing aid users in this study, becoming used to hearing aids involved alterations in auditory perception, discovering and managing the benefits and limitations of hearing aids, managing practical issues and making adjustments in their own thinking. Getting used to hearing aids is thus a multi-factorial process, and represents a significant challenge to new hearing aid users, audiologists and hearing aid manufacturers. This study validates established knowledge of beginning hearing aid use by confirming the importance of these processes to hearing aid users. There were two relevant specific insights. Firstly, no improvements in aided speech perception consistent with auditory acclimatization were reported. Secondly, users may experiment with hearing aid use and determine for themselves those situations in which hearing aids provide benefit, ultimately leading to individual patterns of use and non-use. It was striking that users did not report the audiologist as having a central role in experimenting with and obtaining

optimal benefit from hearing aids. This may reflect poor recognition on the part of users of the extent of services available via their audiologist, or difficulties in understanding the large amount of information provided by their audiologist. Providing written information about hearing rehabilitation services may be helpful. It may be useful for audiologists to describe more explicitly to users how their services can extend beyond merely the provision of hearing aids and/or explore alternative and effective means of delivering hearing rehabilitation services that support users through the process of getting used to hearing aids and maximise hearing aid benefit.

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References

Arlinger S., Gatehouse S., Bentler R.A., Byrne D., Cox R.M., et al. 1996. Report of the Eriksholm workshop on auditory deprivation and acclimatization. *Ear & Hearing*, 17, 87S-90S.

British Society of Audiology 2004. Recommended procedure. Pure tone air and bone conduction threshold audiometry with and without masking and determination of uncomfortable loudness levels. Reading.

Brooks D.N. 1985. Factors relating to the under-use of postaural hearing aids. *British Journal of Audiology*, 19, 211-217.

Brooks D.N. 1989. *Adult aural rehabilitation*. London: Chapman and Hall.

Dawes P., Munro K., Kalluri S. & Edwards B. 2014. Acclimatization to hearing aids. *Ear & Hearing*, 35, 203-212.

741 Dillon H. 2012. *Hearing aids*. Sydney: Boomerang Press.
742 Gatehouse S. 1999. Glasgow Hearing Aid Benefit Profile: Derivation and validation of a
743 client-centered outcome measure for hearing aid services. *Journal of the American*
744 *Academy of Audiology*, 10, 80-103.
745 Graneheim U.H. & Lundman B. 2004. Qualitative content analysis in nursing research:
746 Concepts, procedures and measures to achieve trustworthiness. *Nurse Education*
747 *Today*, 24, 105-112.
748 Hétu R. 1996. The stigma attached to hearing impairment. *Scandinavian Audiology*
749 *Supplement*, 43, 12-24.
750 Knudsen L.V., Laplante-Lévesque A., Jones L., Preminger J.E., Nielsen C., et al. 2012.
751 Conducting qualitative research in audiology: A tutorial. *International Journal of*
752 *Audiology*, 51, 83-92.
753 Kricos P.B. 2006. Audiologic management of older adults with hearing loss and
754 compromised cognitive/psychoacoustic processing capabilities. *Trends in*
755 *Amplification*, 10, 1-28.
756 Krueger R.A. 1988. *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks,
757 USA: Sage.
758 Laplante-Lévesque A., Jensen L.D., Dawes P. & Nielsen C. 2013. Optimal Hearing Aid Use:
759 Focus Groups With Hearing Aid Clients and Audiologists. *Ear & Hearing*, 34, 193–
760 202.
761 Laplante-Lévesque A., Kathleen Pichora-Fuller M. & Gagné J.-P. 2006. Providing an
762 internet-based audiological counselling programme to new hearing aid users: A
763 qualitative study. *International journal of audiology*, 45, 697-706.
764 Laplante-Lévesque A., Knudsen E.I., Preminger J.E., Jones L., Nielsen C., et al. 2012.
765 Hearing help-seeking and rehabilitation: Perspectives of adults with hearing
766 impairment. *International Journal of Audiology*, 51, 93-102.
767 Lockey K., Jennings M.B. & Shaw L. 2011. Exploring hearing aid use in older women
768 through narratives. *International Journal of Audiology*, 49, 542-549.
769 Margolis R.H. 2004. In one ear and out the other: What patients remember. *The Hearing*
770 *Journal*, 57, 10-17.
771 Meyer C. & Hickson L. 2012. What factors influence help-seeking for hearing impairment
772 and hearing aid adoption in older adults? *International Journal of Audiology*, 51, 66-
773 74.
774 Morgan D.L. 1998. *The focus group guidebook*. Thousand Oaks, CA: Sage.
775 Morse J.M. 1995. The significance of saturation. *Qualitative Health Research*, 5, 147-149.
776 Mueller H.G. & Powers T.A. 2001. Consideration of auditory acclimatization in the
777 prescriptive fitting of hearing aids. *Seminars in Hearing*, 22, 103-124.

778 Munro K.J. 2008. Reorganization of the adult auditory system: Perceptual and physiological
779 evidence from monaural fitting of hearing aids. *Trends in Amplification*, 12, 254-271.
780 Munro K.J. & Lutman M.E. 2003. The effect of speech presentation level on measurement of
781 auditory acclimatization to amplified speech. *Journal of the Acoustical Society of*
782 *America*, 114, 484-495.
783 Palmer C.V., Bentler R.A. & Mueller H.G. 2006. Amplification with digital noise reduction and
784 the perception of annoying and aversive sounds. *Trends in Amplification*, 20, 95-104.
785 Palmer C.V., Nelson C.T. & Lindley G.A. 1998. The functionally and physiologically plastic
786 adult auditory system. *Journal of the Acoustical Society of America*, 103, 17051721.
787 Sandelowski M. 2000. Focus on research methods: Whatever happened to qualitative
788 description? *Research in Nursing and Health*, 23, 334-340.
789 Saunders G.H. & Jutai J.W. 2004. Hearing specific and generic measures of the
790 psychosocial impact of hearing aids. *Journal of the American Academy of Audiology*,
791 15, 238-248.
792 Scarinci N., Worrall L. & Hickson L. 2008. The effect of hearing impairment in older people
793 on the spouse. *International Journal of Audiology*, 47, 141-151.
794 Simon J.S. 1999. *How to Conduct a Focus Group.* St. Paul, MN: Fieldstone Alliance.
795 Southall K., Gagne J.P. & Jennings M.B. 2010. Stigma: A negative and a positive influence
796 on help-seeking for adults with acquired hearing loss. *International Journal of*
797 *Audiology*, 49, 804-814.
798 Turner C.W. & Bentler R.A. 1998. Does hearing aid benefit increase over time? *Journal of*
799 *the Acoustical Society of America*, 104, 3673-3674.
800 Tye-Murray N., Spry J.L. & Mauze E. 2009. Professionals with hearing loss: Maintaining that
801 competitive edge. *Ear & Hearing*, 30, 475-484.

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Table 1. Summary of participant characteristics

Participant	Sex (male/ female)	Age (years)	Duration of hearing aid use (months)	Self-rated hearing difficulty[1]	Hearing aid satisfaction[3]	Self-reported hearing aid use	Usual mode of hearing aid use[2]	Living situation	Occupation	Educational level	Mean hearing loss[4] (250 to 1000 Hz; dB HL)	Mean hearing loss[4] (2000 to 8000 Hz; dB HL)
P1	m	68	13	3	5	TV & Social occasions	Unilateral	With partner	Retired salesman	Trades qualification	25	66
P2	f	64	13	3	4	Occasional theatre & concerts	Bilateral	With partner	Retired counsellor	University degree	19	49
P3	m	63	18	3	3	All day	Unilateral	With partner	Retired engineer	Post-graduate	27	43
P4	f	73	13	3	5	Occasional	Bilateral	Alone	Retired cook	Trades qualification	34	44
P5	m	70	12	4	5	All day	Bilateral	With partner	Part-time consultant	University degree	17	55
P6	m	89	24	3	2	All day	Bilateral	With partner	Retired	University degree	19	67
P7	m	75	8	3	5	All day	Bilateral	With others	Retired	Secondary school	10	51
P8	f	69	11	3	5	All day	Bilateral	With others	Retired	Secondary school	22	55
P9	f	76	7	3	5	All day	Bilateral	Alone	Retired	Secondary school	39	77
P10	f	76	9	3	5	All day	Unilateral	Alone	Retired	Secondary school	19	47
P11	m	60	8	4	4	All day	Unilateral	With others	Sheet metal worker	Trades qualification	19	54
P12	f	81	6	2	5	All day	Bilateral	With	Retired	University	23	63

								others	nurse	degree		
P13	m	81	9	3	5	All day	Bilateral	With others	Retired GP	University degree	17	56
P14	m	74	7	3	4	All day	Bilateral	With others	Retired	University degree	14	55
P15	m	81	9	3	5	All day	Unilateral	With others	Retired GP	University degree	27	67
P16	f	66	6	1	5	Social occasions	Bilateral	With others	Retired scientist	Post graduate	23	51

1. Usual mode of hearing aid use (unilateral/bilateral) according to participant self-report
2. Self-rated unaided hearing difficulty on a scale of 1-5 where 1 = no difficulty, 5 = very large difficulty
3. Self-rated hearing aid satisfaction on a scale of 1-5 where 1 = very dissatisfied, 5 = very satisfied
4. Average hearing loss over left and right ears

Table 2. Topics related to getting used to hearing aids

Thematic category	Concrete category
Annoying sounds	-
Distorted sounds	Occlusion effects Unnatural Sound
Practical use	Hearing aid comfort Remembering hearing aids Manipulating hearing aid Cleaning and maintenance Managing batteries
Experimenting with use	Trying unilateral and bilateral amplification Listening strategies Cinema Music Telephone TV
Psychosocial factors	Re-defining self-image Subcategory: Managing stigma Subcategory: Increased confidence Broadened experience Re-negotiate communicative interactions

Table 3. Factors that moderate getting used to hearing aids

Acceptance of hearing loss
Consistent use
Gradually build up use
Determination
Encouragement from others
Good relationship with audiologist
Provision of information