DEVELOPMENT OF A PARTNER'S GUIDE TO BETTER COMMUNICATION

Corinne Rose Zimmerman

A doctoral capstone project submitted in partial fulfillment of
the requirements for the degree of
Doctor of Audiology

Department of Distance and Distributed Learning
College of Graduate Studies

Central Michigan University
Mount Pleasant, Michigan
September, 2009

Accepted by the Faculty of the College of Graduate Studies,

Central Michigan University, in partial fulfillment of

the requirements for the doctoral degree

Doctoral Project Committee:

_____ Director

Date: _____

_____ Dean

Date: _____ College of Graduate Studies

Committee:

Patricia A. McCarthy, Ph.D., Director

This is dedicated to my family and dear friends

for all their love, encouragement, and support throughout this project,

and to Gerry and Gail

for giving me the inspiration for this project.

ACKNOWLEDGEMENTS

I wish to thank my doctoral project director, Dr. Patricia McCarthy, for providing valuable insight and direction in the development of this project as well as for her patience and encouragement throughout this process. Finally, I wish to acknowledge the support of Central Michigan University in producing this work.

ABSTRACT

DEVELOPMENT OF A PARTNER'S GUIDE TO BETTER COMMUNICATION

by Corinne Rose Zimmerman

The purpose of this project was to develop an informational counseling tool in the format of a handout for the significant other(s) of the hearing impaired patient and/or hearing aid user. Research has demonstrated that education of the significant other in the hearing aid fitting and aural rehabilitation process results in more positive communication outcomes and greater overall success with hearing aid use.

This project was chosen because of my observation that many of the patients in my practice bring themselves to their hearing aid appointments without a significant other or family member. These patients often express frustration, embarrassment, and feelings of isolation when family members have unrealistic expectations for outcomes of hearing aid benefit. This project was developed to educate family and loved ones about the sensory changes and deficits with hearing loss, effects of aging on the auditory system, realistic hearing aid performance expectations, and strategies for improved communication.

Information for this project was compiled through literature review. Literature was obtained through Medline searches and various texts and journal articles that I have used during my professional career and through my doctoral coursework.

The product of this work is also intended to be included in all new hearing aid orientations and offered to existing patients for their loved ones, with the goal of enhancing hearing aid success. This information is also intended to be incorporated into the developing aural rehabilitation program in our practice.

TABLE OF CONTENTS

Introduction

The purpose of this project was to provide an informational counseling tool in the format of a handout/booklet for the significant other(s) of the hearing impaired patient and/or hearing aid user.

Stark and Hickson (2004) examined how hearing aid fitting affects quality of life for the hearing impaired person and their significant other. Results of their study emphasize that hearing impairment has a significant impact on the patient as well as the significant other, and that hearing aid use does play in effective role in reducing negative effects of the hearing loss for both. However, other research has shown that older hearing aid users continue to experience communication difficulties and that many discontinue use of their hearing aids (Hickson, 2003; Hickson et al., 1999).

Kramer (2005) examined whether addition of a home-based education program for the hearing aid patient and the significant other regarding hearing aid use would have positive psychosocial effects and communication outcomes. Findings showed both short-term and long-term (6 months) benefits in these areas for both the hearing impaired person as well as the significant other. Results support the importance of patient and significant other education in overall successful hearing aid use.

Many of the patients in my practice bring themselves to their hearing aid appointments without their significant other or other family member. Patients often express frustration, embarrassment, and feelings of isolation when family members have unrealistic expectations for outcomes of hearing aid benefit for their loved one. I felt that development of this project was important to provide family/loved ones the information on hearing loss as well as strategies necessary for improved communication.

Methods

Information for this project was compiled through a process of literature review. The information was divided into four subject areas: 1) sensory and physical changes of hearing loss; 2) characteristics of the aging auditory system; 3) realistic expectations for hearing aid performance; and 4) compensatory and repair strategies for communication with the hearing aid wearer.

Journal articles were obtained through Medline search, from articles that I had used through various CMU courses and from my own journal library. Information was also obtained from textbooks that were lent from the CMU library and from textbooks that were used as part of my master's and doctoral coursework.

The development of the subject areas evolved after review of articles and text from the initial search. Review of the initial information resulted in a need for further literature review to supplement and develop the subject areas in the manner in which they were intended.

Discussion

The final result of this project, “The Partner’s Guide to Better Communication”, can be found in the Appendix. It is intended to be used in my practice as a counseling tool for significant other(s) as well as the patient himself during the hearing aid fitting process.

While this Guide is intended to be a useful tool for the significant other(s) in understanding hearing loss and improving communication skills with their hearing impaired loved ones, limitations/challenges were evident during the development process.

Developing this document for a broad audience creates some limitations by its nature. We know that there is a significant range of variables that can affect the handicapping effects of hearing loss. Addressing a broad audience limits information to that which is most common among each subject area. Certainly, there is a population within clinical practice that presents with exceptions to this “common” information. This could result in portions of the Guide being not necessarily appropriate for certain patients and/or their partners.

Before I use this Guide in my practice, I will solicit feedback to identify strengths and weaknesses of the document from the end-user’s perspective. This will be accomplished by providing the Guide to a set of my patients and their families along with an assessment survey targeting its readability, usefulness of information, relevance to the reader, and usefulness of information provided in each subject area. Revisions will be considered subsequently based on the end-user feedback.

Through the development process of the Guide, future directions began to become evident. As stated above, the information for each subject was compiled to reach a broad audience.

There was a notable amount of information that was not included in this Guide due to its volume and the intended nature of the document. Looking forward, though, a more in-depth development of each subject area could be created as a separate informational guide. This would allow for more comprehensive description and discussion of the subject areas, and be more inclusive of more detailed information resulting in reaching a wider patient population.

Summary

The result of this capstone experience is “The Partner’s Guide to Better Communication”. This a guide was developed for the significant others of hearing impaired/hearing aid patients as an informational counseling tool to provide better understanding of hearing loss, realistic expectations for hearing aid outcomes, and strategies to improve overall communication success between them and their loved one.

Information obtained from the literature review of various journal articles and texts was condensed into four subject areas: 1) sensory and physical changes of hearing loss; 2) characteristics of the aging auditory system; 3) realistic expectations for hearing aid performance; and 4) compensatory and repair strategies for communication with the hearing aid wearer.

The Guide was developed with the intent of reaching a broad audience and discussing the most common aspects of each subject area. Future refinement of each subject area could result in more in-depth development of each subject area that could be created as a separate informational guide, allowing for more comprehensive description and discussion of the individual subject areas. This would result in a series of informational counseling tools with a wider range of information for a larger target audience.

APPENDIX

Partner's Guide to Better Communication

So, your loved one recently got new hearing aids, maybe for the very first time. And the hearing aids were supposed to help him hear so much better. And, they were expensive. "So why can't she still understand me sometimes? I thought the hearing aids would make her hear everything again."

If this sentiment is familiar to you, then you are certainly not alone. Research has shown that **older** hearing aid users **DO** continue to experience communication difficulties and that many, unfortunately, discontinue use of their hearing aids (Hickson and Worrall, 2003) (Hickson L. e., 1999)

The **GOOD** news, however, is that researchers found that when the patient **AND** significant other (meaning YOU) participated in some form of education and training, positive results regarding psychosocial effects of hearing loss and communication outcomes occurred. (Kramer, 2005).

So here you are, helping your loved one get the most out of her hearing aids. **Congratulations!** And there's something in it for you as well: less frustration, an understanding of what he is experiencing, and better, easier communication!

Section I: Sensory Changes…What's Happening In There???

Our ears are a complex part of our sensory system. Our organ of hearing, or inner ear, is called the **cochlea** (co-KLEE-uh). The cochlea contains both firm and bony structures as well as "soft" structures, including delicate membranes, nerve bundles, cells, fluids, and a vascular system for blood supply that work together for normal hearing. As we humans age (which some research considers to begin before the age of 30!!)! (Schuknecht, 1974; Willott, 1991), changes begin to occur within this complex system. The general term for age-related hearing loss is **presbycusis** (prez-bee-KYOO-sis). Presbycusis can have a multitude of effects on our cochleas including:

- degeneration and/or loss of sensory cells, most notable the cells that detect high pitch/high frequency information
- atrophy or "withering" of the nerve bundles that receive information from the sensory cells
- stiffening of some of the membranes which makes stiffened areas less sensitive to sounds
- general "flattening" and deformity of the inner ear soft structures as structures degenerate
- changes in the vascular system if those changes reduce oxygen supply to the inner ear, in the high frequency region first, then the low frequency region, and finally the mid-frequency region (Willott, 1991) (Chisolm, 2003).

These physical changes generally cause us to progressively lose the ability to hear sounds and parts of speech in particular. These physical changes most commonly affect the higher frequencies, or higher pitch range, of our hearing first and to the

greatest degree. In English, these high frequency sounds are the ones that provide the clarity of words, such as hearing the difference between “fifty vs. sixty”, “mouth vs. mouse”, “bite vs. bike”. Another way to think of these sounds is that they are “unvoiced”, meaning only airflow and our tongue, teeth, and lips are used to make these sounds (/th/, /s/, /f/, /t/, /k/, /sh/, /ch/, /p/, /h/) (Downs, 1989). Because of this, a person with hearing loss is likely to describe speech as not being clear or that words “run together”. (See Appendix)

Knowing what physical changes are happening to the structures responsible for hearing leads us to the next question of how these changes affect the quality of what is heard.

Frequency Resolution:

Frequency resolution, or frequency selectivity, refers to the ear’s ability to recognize different pitches (Dillon, 2001). In a normal inner ear, a specific sound or pitch (like a note on a keyboard) is detected at a specific place on a soft structure of the inner ear called the **basilar membrane**. After that, the sound travels to and is detected in specific area of the **auditory cortex**, which is the hearing center in the brain. This sort of tuning of the ear has been demonstrated by a number of researchers and is illustrated in the graph below, where the sharp narrow peak in the top of Figure 1 represents the frequency, or pitch, definition of the inner ear (Moore, 1989).

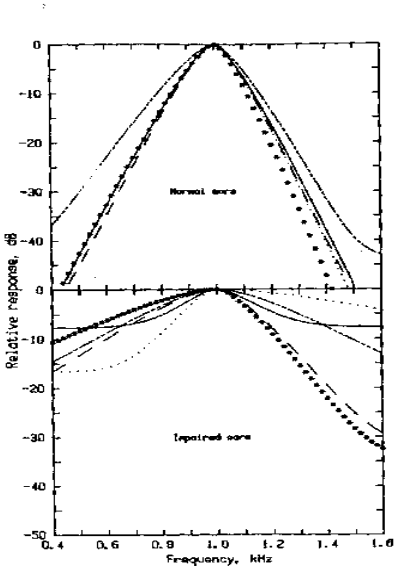


Figure 1: The graph shows a narrow peak that represents the tuning of normal ears. The bottom graph shows how the peaks flatten out into curves. The wider curves represent greater degrees of hearing loss.

However, when there is hearing loss due to changes in sensory structures (or **outer hair cells**) of the inner ear, this frequency resolution, or "tuning" becomes less specific and creates more of a curved response rather than a peak. This is shown on the bottom of Figure 1. In this graph, the wider curves represent a greater degree of hearing loss. This widening occurs because the sensory structures (outer hair cells) need more stimulation (volume) to detect specific frequencies. When this happens, the sharply tuned peaks flatten out, causing a sort of auditory "blur", where there is a wider area of activity, or curved response, rather than many finely tuned areas or "peaks" of activity that occur in normal speech (Dillon, 2001) (Moore, 1989).

One way of thinking of this is to consider playing the piano normally, vs. playing with gloves on. Instead of playing each note individually with precision, one would be playing keys on either side of the intended ones, making the music familiar but not nearly as melodic and beautiful as Mozart had intended!

Figure 2 (Right) shows another example of this loss of tuning (Dillon, 2001).

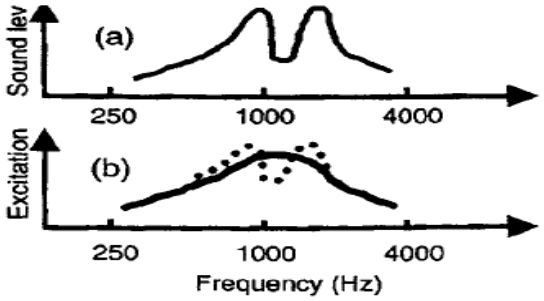


Figure 2: The top graph demonstrates a normal ear distinguishing two different pitches indicated by the solid line. The bottom graph shows how an ear with hearing loss detects the two pitches. Notice that there is now only one wide curve rather than two distinct narrow peaks. This solid line represents loss of tuning.

Temporal resolution:

The term "**temporal**" refers to **time**. Temporal resolution, or temporal acuity, of the auditory system refers to its ability to detect changes in over sounds over time, for example, to be able to hear a brief gap, or pause, between two sounds or to detect that a sound is modulated, or changing, in some way (Moore, 1989). Why is this important? Because almost all sounds change over time. And for speech and music perception especially, much of the information seems to be carried in the changes themselves, like rhythm, intonation, and stress (Moore, 1989). Even when the specific words are not heard, one can determine whether someone is asking a question or making a statement by the intonation and stress of their speech.

A normal-hearing person can pull useful portions of information from background noise during the weaker/quieter moments of the background noise, since most real-life background noises fluctuate rapidly. A hearing-impaired person, however, partially loses his/her ability to hear in the "gaps" or quieter moments of background noise, and has greater difficulty. So as the hearing loss worsens, so does the ability to understand

conversation in competing noise. Aging is also a factor here, but will be addressed more in later sections (Dillon, 2001).

Dynamic Range:

This term is defined as "the level of difference between discomfort and the threshold of audibility" (Dillon, 2001), or stated differently, the amount of one's usable hearing. When a hearing loss is present, there typically is a reduced dynamic range. Why? Because softer sounds are not heard when a hearing loss is present, but loud sounds are. This creates a smaller range of what is audible but not uncomfortable compared to a normal range of soft, average, and loud perception. So for hearing aid considerations, a person's dynamic range is one factor for your hearing care professional to consider during the fitting process. Most hearing aids provide some type of compression, or a way of providing volume for softer sounds to be heard while controlling loud sounds to prevent them from becoming too loud (Dillon, 2001).

Signal-To-Noise Ratio or SNR:

This term refers to the difference in loudness between what the listener wants to hear (presumably you at the restaurant!) and the background noise. There is general consensus that a normal hearing person needs about a +6 dB SNR for satisfactory communication (Moore, 1989) (Ricketts, 2001). On average, a person with a mild hearing loss is expected to have a 3 to 7 dB SNR deficit, with a moderate loss a 7 to 15 dB SNR deficit, and with a severe hearing loss a greater than 15 dB SNR deficit (Kricos, 2006). Keep in mind that this is ON AVERAGE, and variations to this assumption do exist. Research in the 70's and early 80's found that, for maximum audibility, a hearing impaired person needs approximately +15 dB SNR, meaning that speech needs to be

approximately 15 db louder than the background noise in order for hearing aid(s) benefit13 to be maximized. For children in their educational setting the recommendation is between +15 to +30 dB! (Hodson, 1986)

Section II: The Aging Auditory System

So hearing aids seem to be the logical next step in improving your loved one's hearing ability. With all the measurements and programming completed to make those soft sounds heard again (within reason) with these hearing aids, there still seems to be problems with communicating. Why are there still difficulties? The hearing aids should have fixed these problems, right? Hearing aids and proper audibility are part of the solution, but understanding what happens to "hearing" on the way to the brain also has to be considered.

Much research has been done to better understand how we **use** what we hear as we age. First of all, sounds and speech need to be audible in order to be understood, and hearing aids can be quite effective in providing this audibility. But there are also more complicated functions going on higher up along the nervous system such as **central auditory processing and cognitive processing**. These terms, very generally, refer to how our nervous system for hearing manages and passes along the audible information to our brain and how our brain manages and manipulates that information. These higher functions ultimately affect how we communicate (Pichora-Fuller, 2006). In fact, a consensus statement was written in 2003 using the World Health Organization's International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001) to provide classification and definitions of auditory functioning (Pichora-Fuller, 2006) (Kiessling, 2003). The statement identified four processes that better describe auditory functioning: **1) hearing, 2) listening, 3) comprehending, and 4) communicating.**

1. **Hearing** is considered mostly a passive /sensory function i.e. detecting the presence of sound, and is typically measured by standard hearing testing (audiometry). Hearing involves sensing the presence of, and discriminating

the location of, sounds.

2. **Listening** is an active function, and defined as "the process of hearing with intention and attention for purposeful activities." Listening requires effort, and intent on the part of the listener to experience sound.
3. **Comprehension**, also an active function, is the next step and means the reception of information, meaning, and intent. Comprehension is unidirectional, referring to incoming-only information.
4. **Communication** is (you guessed it: also an active function) and defined as [the transfer of information, meaning, or intent back-and-forth, or bi-directional transfer, between two or more people.] Communication requires both participants to hear, listen, and comprehend and involves both activity and participation.

So you see, ***Communication really IS a two-way street!!***

A Few Important "Higher" Functions

The term "higher functions" here refers to what happens once sound/speech is audible, (like **central auditory processing** and **cognitive processing)**. Or, rather, tasks that require varying degrees of mental effort. These higher functions are also referred to as auditory and cognitive processing skills and affect one's ability to **listen, comprehend, and communicate**. Two important higher functions necessary for effective communication are **Attention** and **Working Memory**.

Attention

Attention is defined as "the means by which we actively limit the amount of

information we process from the enormous amount of information available through our16 senses, memories, and cognitive processes" and serves to identify important features of one's environment (Pichora-Fuller, 2006)

Three Types of Attention

1) **Vigilance- and Search-Based**: trying to pick up relevant pieces of information from a group conversation, like trying to pick up your name in a group conversation. This can be thought of as "focusing in".

2) **Selective**: attending to the target conversation while trying to "tune-out" or direct attention away from other conversations. This is also referred to as the "cocktail party effect" This can be thought of as "filtering out".

3) **Divided:** coordinating the performance of more than one task at a time, like having a conversation while taking a walk or preparing dinner. This can be thought of as "multi-tasking".

So why is attention important here? As a person ages, attention skills slow down and become less efficient, resulting in poorer ability to focus on/filter what he wants to hear (**vigilance/search-based** and/or **selective attention**). Also, more time is needed for an older person to move from one mental task to another (**divided attention**). These factors play a contributing role in one of the most common clinical problems of an older person with hearing loss: "I can't hear if there is any background noise around." Part of this difficulty is because of the reduced ability to attend to speech in the presence of unwanted input or message(s) (Pichora-Fuller, 2006)

Memory

The function of memory has been extensively studied for years. For the purposes of what we are discussing here, the understanding of **working memory** seems most relevant. If one thinks of working memory as a sort of "mental workspace" then working memory is a set of functions or abilities that allow the listener to hold recent information (i.e. speech) temporarily in memory while processing its meaning **and** while waiting for the rest of the utterance to be spoken (Wingfield and Tun, 2001). In working memory, the stored information can be manipulated and integrated with long-term memory knowledge/information. When working memory becomes less effective, difficulties with making inferences and associative connections occur (Craik, 2007). Working memory is a critical stage of processing for speech and language comprehension because we need working memory in order to carry on conversations (or **communicate**) with one another (Craik, 2007; Pichora-Fuller, 2006)

If one were to think of communicating in terms of an box, where there was only a specific amount of energy for these for things to happen, (hearing, listening, comprehending, and communicating,) more energy spent on the lower functions, detecting what sounds or words we hear, leaves less energy for the higher functions, using what we hear for meaningful interactions. Consider that if one must use more mental energy due to difficulty hearing, whether due to hearing loss and/or poor listening environment, less energy is available for the correct storage and use of information. As processing becomes more effortful, the system slows down and errors can occur. And, as a result, communication breakdowns and frustrations can occur, with misunderstanding and confusion commonly occuring (Pichora-Fuller, 2006; Schum 2008).

Section III: Realistic Expectations…What can hearing aids REALLY do?

Knowing what we do about the effects of physical changes to the inner ear, coupled with the effects of aging in general, one can better understand why hearing aids cannot restore normal hearing. What hearing aids **CAN** do with proper adjustments, however, is to make soft sounds audible again, keep conversational speech and average-level sounds comfortable, and prevent loud sounds from being uncomfortable (Oticon, Inc., 2009)

The majority of digital hearing aids have several channels that one might think of as "mini hearing aids" that work together to provide clear, balanced sound (Starkey Laboratories, Inc., 2009; Oticon, Inc., 2009; Phonak LLC, 2009). Why is this important? Because if we consider a person's **dynamic range**, there is likely a restricted range of audible yet still comfortable volume for the frequencies that have the greatest amount of hearing loss, typically higher frequencies. Lower pitch sounds may have less, if any, hearing loss and therefore have a wider range of usable hearing. So, by having the ability to program each frequency range, "mini-hearing aid", or "channel" separately according to the hearing loss, the likelihood for hearing aid acceptance and success is greater than ever before.

Another benefit of multiple channels is that, because each channel is adjusting itself for the incoming signal, one no longer has the need to control the volume manually. For people who have had volume controls in the past, the lack of that control may be troublesome. Manual volume controls can be added if needed or requested, but hearing aids can generally regulate themselves automatically, minimizing the need for this feature (Oticon, Inc., 2009)

Research has shown that multiple channels provide better sound resolution and

more ability for fine-tuning the hearing aid (Phonak LLC, 2009). So how many channels is enough? Hearing aid manufacturers have different approaches to addressing this question, but typically, greater number of bands/channels results in greater flexibility through the fitting and fine-tuning process (Starkey Laboratories, Inc., 2009; Phonak LLC; Oticon, Inc., 2009). The decision for what technology is best for one's hearing loss should be determined with the audiologist, taking into account lifestyle, listening demands, and degree of hearing loss. Some manufacturers also have tools in their fitting software to help guide this decision-making process (Starkey Laboratories, 2009)

Hearing in background noise: The Signal-To-Noise Ratio (SNR) topic

Many hearing aids also have a decision-making process within each channel that detects the amount of noise in that particular frequency/pitch range. Once the noise reaches a certain level (the **SNR**), the channel recognizes that level and changes how it works in an effort to prevent the noise from interfering with speech. This way, only the channels/pitches that are affected by the noise will change, with the goal being that speech (the desired signal) stays audible and understandable without the hearing aid sounding as if it's on a volume rollercoaster (which is what would happen if the **ENTIRE** hearing aid response adjusted this way to incoming noise). So one can expect the hearing aid to internally act differently when you are conversing in the car or if you are in a restaurant, **BUT** the end result should still be that you have improvements in hearing and participating in conversation in each background noise situation (Oticon, Inc., 2009; Starkey Laboratories, Inc., 2009).

Another way to get improved hearing aid performance in noisy environments is to have a **directional microphone**. With a directional microphone, the hearing aid "focuses" on sounds in front of the person and reduces sounds from the side and back.

Although there are differences in their design and function, the end result of directional microphones use is improved understanding in background noise. A significant amount of research has been done to allow one to conclude without a doubt that directional microphones provide **SNR** benefit. As always, there are some exceptions to this rule, but these exceptions aside, results are "overwhelmingly positive" (Ricketts, 2001).

Other Considerations:

- **Feedback/whistling**: Nearly all digital hearing aids today have some form of feedback, or whistling, control. Manufacturers have different philosophies on how to best avoid that embarrassing whistling, and have developed their HA's to treat feedback differently. Elimination or reduction of the whistling continues to be improved upon (Oticon, Inc., 2009) (Starkey Laboratories, Inc., 2009; Phonak LLC, 2009).

- **Hearing on the telephone:** A number of manufacturers have made improvements so that patients can place the phone against the hearing aid without experiencing feedback and/or having to take the hearing aid out to hear on the phone. The hearing aids have a mechanism that detects the phone and automatically "switches" the hearing aid so that feedback is eliminated with the phone against the aid (Oticon, Inc., 2009).

BUT DOES ALL THIS WORK?

That depends heavily on what the expectation for hearing aid success is. Improvements can be measured by surveys or questionnaires comparing pre-and post-

fitting hearing, but expectations are set at the time of the hearing aid consultation, before getting the hearing aid(s), through discussion of benefits and limitations the chosen technology will provide given one's hearing loss and listening needs/demands. Remember, a good rule of thumb is that if a person with relatively normal hearing has difficulty hearing in a noisy situation, the person with hearing aids will also have difficulty as well (Oticon, Inc., 2009)

Section IV: NOW what do we do? Compensatory and repair strategies for improved communication

Now that the hearing aids have been optimally fitted for your loved one, here are some things you can do to help him get the most out of the technology in his ears.

Compensatory Strategies:

- **Get the listener's attention before speaking.** With what we know about how the aging process affects attention skills, getting your partner's attention before starting conversation will give her a "jump start" into the conversation, with the goal being for her to "catch" the first word, making conversation easier for her.

- **Maintain a distance of three to six feet for the most effective communication**. This communication distance generally will not violate any personal space issues, and will provide favorable audibility as well as a more favorable signal-to-noise ratio for your conversation.

- **Avoid/minimize noisy distractions.** As much as possible, turn off or move away from the noise/distracting sound source. In noisy environments, sitting so that your loved one is back-to the competing noise is often helpful, particularly when they have directional microphones on their hearing aids.

- **Be aware of lighting so that light is not in your partner's eyes and that your face is well-lit.** Bright lighting behind you and/or in your partner's eyes can interfere with his/her person's ability to see facial expressions and use visual

cues effectively.

- **Provide a clear view of your face and do not talk with anything in your mouth.** This means face-to-face conversation, and avoiding talking with food or gum in your mouth, or other distractions like pencils, pipes/cigarettes, glasses, etc. in your mouth.

- **Use Clear Speech**

  Clear Speech can be defined as an accurate and precise production of individual speech sounds in every word (Kricos, 2006)

What Clear Speech is **NOT**:

- Shouting
- Deliberately slow, distorted speech
- Halting/exaggerated manner of speech

What Clear Speech **IS**:

- Talking at a slightly louder than normal conversational level
- Naturally slower rate resulting from producing words/sounds precisely
- Maintaining normal rhythm of spoken language
- Allowing for natural pauses between all phrases and sentences

Remember, speaking as clearly and precisely to produce each word as accurately as possible (Clark and English, 2004).

- **Alert your loved one of that the topic of conversation is changing**. Going back to the topics of attention and working memory, allowing the person to mentally "switch gears" and be ready to attend to the next conversation is generally helpful. Also, by alerting him of the topic change, less "listening

energy" is spent figuring out the topic so he/she is likely to be more ready to participate in the conversation (more mental resources available for those higher functions!)

Repair Strategies:

- **Rephrase instead of repeat.** Rephrasing may be more helpful than repetition when you hear "huh?" or "what?". Repeating tends to help with visual cues (i.e. lip reading), but rephrasing provides more linguistic context to facilitate understanding (Marzolf, 1998). While repetition has its place in repairing communication breakdowns, rephrasing has been shown to be somewhat more effective and can be less stressful for you as well (Tye-Murray, 1997).

- **Have a system**. Having a pre-determined system/hand signal in place where your loved one can alert you if you are speaking too softly, quickly, etc, can be helpful.

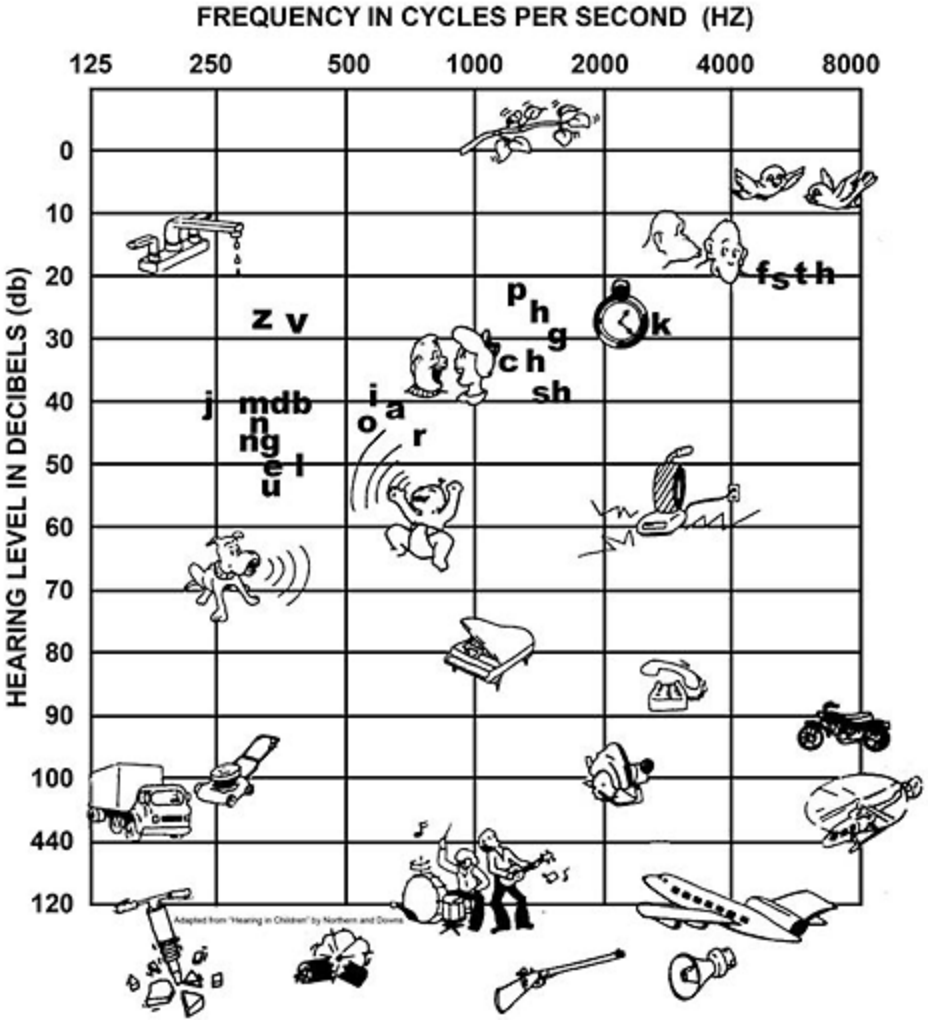
When communication is still breaking down, ask the person what you can do to be understood better. Remember, if you are frustrated with the communication breakdown, odds are that your partner is too, not to mention the possibility of his/her feeling embarrassed, sad, or anxious about continuing to participate in the conversation when communication breaks down. Working together to repair the breakdown will build a set of strategies that work for both of you (Clark and English, 2004).

Some Final Thoughts1 q`q

Now you are armed with some information about your loved one's hearing. This Guide is written with the intention of providing you with a better understanding of the effects hearing loss and aging, as well as some realistic expectations and strategies for easier communication. Remember that many of these strategies take practice, and with continued use, our hopes are high that you will appreciate your loved one's better hearing as much as or, who knows, maybe **more** than, he does!

Congratulations, and keep practicing!

APPENDIX



Audiogram of Familiar Sounds (from Hearing in Children, 1989)

References

Chisolm TH, W. J. (2003). The aging auditory system: anatomic and physiologic changes and implications for rehabilitation. *International Journal of Audiology* , 2S3-2S10.

Craik, F. (2007). The role of cognition in age-related hearing loss. *Journal of the American Academy of Audiology* , 539-47.

Dillon, H. (2001). *Hearing Aids.* New York: Theime.

English, C. a. (2004). *Counseling in Audiologic Practice: Helping Patients and Families Adjust to Hearing Loss.* Boston: Pearson Education, Inc.

Hickson, L. a. (2003). Beyond hearing aid fitting: improving communication for aolder adults. *International Journal of Audiology* , 2S84-2S91.

Kiessling, J. e. (2003). Candidature for and delivery of audiological services: special needs of older people. *International Journal of Audiology* , 2S92-2S101.

Kramer, S. (2005). A home education program for older adults with hearing impairment and their significant others: a randomized trial evaluating short and long-term effects. *International Journal of Audiology* , 255-264.

Kricos, P. (2006). Audiologic Management of Older Adults With Hearing Loss and Compromised Cognitive/Psychoacoustic Auditory Processing Capabilities. *Trends In Amplification* , 1-28.

Marzolf, C. e. (1998). Effects of Two Repair Strategies on Speechreading of Words and Sentences. *Journal of the American Academy of Audiology* , 243-248.

Moore, B. (1989). *An Introduction to the Psychology of Hearing.* San Diego: Academic Press, Inc.

Northern, J. a. (1989). *Hearing in Children.* San Diego: Singular.

Oticon, Inc. (2009). *The Consumer Handbook on Hearing Loss and Hearing Aids: A Bridge to Healing.* Sedona: Auricle Ink Publishers.

Phonak LLC. (n.d.). Retrieved July 21, 2009, from Phonak LLC Web site: http://www.phonak-us.com

Pichora-Fuller, M. a. (2006). Effects fo age on auditory and cognitive processing: implications for hearing aid fitting and audiologic rehabilitation. *Trends In Amplification* , 29-59.

Ricketts, T. (2001). Directional Hearing Aids. *Trends In Amplification* , 139-176.

Schuknecht, H. e. (1974). Atrophy of stria vascularis, a common cause for hearing loss. *Laryngoscope* , 1777-1821.

Schum, D. a. (2008, June 23). *Oticon, Inc.* Retrieved July 19, 2009, from Oticon Inc. Web site: http://www.oticonus.com

Starkey Laboratories, I. (2009). Inspire 2009 Software.

Starkey Laboratories, Inc. (2009). Retrieved July 19, 2009, from Starkey Laboratories Web site: http://starkeypro.com

Tye-Murray, N. a. (1997). Communication Strategies Training. *Seminars in Hearing* , 153-165.

Willott, J. F. (1991). *Aging and the Auditory System: Anatomy, Physiology, and Psychophysics.* San Diego: Singular Publishing Group.

Wingfield, A. a. (2001). Spoken language and comprehension in older adults: Ineractions between sensory and cognitive changes in normal aging. *Seminars in Hearing* , 287-301.

World Health Organization. (2001). *World Health Organization.* Retrieved 2009, from World Health Organization Web site: http://www3.who.int/icf/icftemplate.cfm