Fitting and Dispensing Hearing Aids

Second Edition

Brian Taylor
H. Gustav Mueller

Plural Publishing Inc.

PLURAL PUBLISHING
INC.

5521 Ruffin Road
San Diego, CA 92123

e-mail: information@pluralpublishing.com
Website: https://www.pluralpublishing.com

Typeset in 10.5/13 Palatino by Flanagan's Publishing Services, Inc.
Printed in the United States of America by Integrated Books International

Library of Congress Cataloging-in-Publication Data:

Names: Taylor, Brian, 1966- author. | Mueller, H. Gustav, author.
Title: Fitting and dispensing hearing aids / Brian Taylor, H. Gustav Mueller.
Description: Third edition. | San Diego, CA : Plural Publishing, Inc., [2021] | Includes bibliographical references and index.
Identifiers: LCCN 2020027185 | ISBN 9781635502107 (paperback) | ISBN 9781635502121 (ebook)
Subjects: MESH: Hearing Aids | Correction of Hearing Impairment—instrumentation
Classification: LCC RF300 | NLM WV 274 | DDC 617.8/9—dc23
LC record available at https://lccn.loc.gov/2020027185

Contents

Preface

Third editions of textbooks are a little like old sports cars with rebuilt engines. While it looks the same on the outside, open the hood and closely inspect the engine; you are likely to see that it comprises many modern parts that weren't available when the original car was constructed. With the modern parts, the now-classic car runs even smoother. You can think of our third edition as this sports car. Although reading this book is not as much fun as tootling around in your Mustang, we think, like the aforementioned sports car, the third edition outperforms the original. Regardless of the origins of this text, the writing of it, which is now in its third edition, has been a memorable journey with many twists and turns. Whenever you decide to pick it up and begin reading it—regardless of your background—we hope you find the content both helpful and engaging.

This textbook is *primarily* intended for non-audiologists or undergraduate audiology students who have yet to fit their first pair of hearing aids. Prospective hearing instrument specialists, audiology assistants, speech pathologists, and other professionals aspiring to fit hearing aids, or who simply want a better understanding of hearing aids, will find the content especially helpful. This book is also perfectly suited for the individual who has just joined the hearing aid industry workforce and does not have an audiology background. And given the growth of Costco as well as other large retailers within the industry, there continues to be a demand for hearing care professionals who provide a high level of patient care. It is not a happy coincidence that *U.S. News & World Report* continues to name Audiology as one of the top professions each year. With all that said, in the second half of the book, we include considerable practical information about hearing aid features, selection, and fitting procedures that is not so basic; even the savvy, seasoned dispenser will find these chapters useful. We've even been told by recent AuD graduates that this book has served as a pragmatic overview of essential information they use in the clinic. From soup to nuts, we have included a broad range of subject matter that you need to know related to the process of actually selecting and fitting hearing aids (and selling them too!). Portions of the book contain the information that you need to know for obtaining your hearing instrument dispensing license.

Because we used a "dog's breakfast" approach when thinking of our target audience, you'll see that we struggled with deciding what to call you, the reader. You'll see terms such as audiologist, clinician, professional, dispenser, and even hearing instrument specialist. As much as we're not fond of the term "hearing health care provider," that probably slipped in a few times too. Regardless, you know who you are, and hopefully there is something here for everyone. When it comes to the actual art and science of fitting hearing aids, there probably are more similarities among groups than differences. We fairly consistently called patients "patients," although some of you may

think of them as clients, persons with hearing loss, or maybe even customers.

You'll notice that the 12 chapters of this book are sequenced to match the necessary steps that you need to complete when dispensing hearing aids, including conducting basic audiometry, determining hearing aid candidacy, understanding hearing aid features, selecting and fitting hearing aids, and finally, verifying and validating your recommendation. The first three chapters provide the reader with some essential prerequisite information about the psychology of hearing loss, anatomy and physiology of the ear, and basic acoustics. Beginning with Chapter 4, even if you're a beginner, we provide you with the information that will give you the skills to actually perform all the necessary tasks and procedures needed for selecting and fitting hearing aids on adults—with, of course, some guidance and supervision from an experienced audiologist or hearing instrument specialist.

Although we provide a lot of essential information, this book, of course, is not intended to replace university-level coursework or direct supervision from an experienced clinician. Rather, we provide you with just enough information to get you started on your career journey. It's our hope that the style and content of this book may inspire some of you to obtain your hearing aid dispensing license or doctorate in audiology. Although many of the basic subjects you need to learn to practice have not changed for generations, we have updated the chapters devoted to fitting modern hearing aids. In the third edition of this book, you'll see we have included an update on over-the-counter hearing aid legislation, some newer outcome measures and updated approaches to counseling your patients. We have even added a few pages on devices that are not even considered hearing aids that you might be fitting and adjusting in a few short years: hearables and personal sound amplification products (PSAPs).

About 10 years ago, Budweiser said their beer had a "drinkability" advantage, and we like to think our book has a lot of "readability." Although both of us would choose a local microbrew over Bud, there are times, like after you mowed the lawn on a hot day in July, when a cold domestic beer really hits the spot. This book is like that cold brew on a sweltering day—a predictable, straightforward companion you can trust. Introductory textbooks devoted to basic concepts and core knowledge are sometimes known by students to be mundane, tedious, boring, and somewhat unreadable. In order to overcome the effects of dullness, we have "themed" each chapter to add some entertainment value and make the material a little more fun and perhaps more readable. If you happen to be a person who is not enthralled by rudimentary coursework devoted to ear anatomy, physics of sound, or audiogram interpretation, you may find our themes entertaining enough to help you get through the chapter. For example, you may find the psychology of hearing loss uninteresting, but when country music vignettes are interwoven throughout this chapter, it just might inspire you to more readily absorb the material (We're not quite sure what will happen if you don't enjoy country music.) Sports fans, pop culture enthusiasts, lovers of old movies, and wine aficionados—who also happen to want

to learn a little something about hearing aids—might find entertainment value in our themed approach. After all, hearing aid fitting is fun, so reading about it should be too.

Although the book might have shreds of entertainment value, we also believe it provides timely, accurate, and cutting-edge information on many of the "best practices" needed to fit modern hearing aids. Included in the book are several prefitting, day-of-the-fitting, and follow-up procedures that must be properly completed in order to optimize patient satisfaction and ensure your business is successful. For these reasons, we think this book is a valuable addition to any professional library, as you are likely to find an informative tidbit or two on the use of speech-in-noise testing during the prefitting appointment, a succinct review of cutting-edge advanced hearing aid features, or how to administer self-reports of hearing aid outcomes. Since most readers of this book are likely to be just getting started, it's important to instill the importance of conducting tests and completing clinical procedures that are supported by scientific principles. This book aims to provide that information in an easy-to-read format.

Lastly, this book has "accessibility." We have written the third edition of this book knowing students and clinicians have nearly instant access to the World Wide Web. You might even be reading this edition on your tablet computer. Today, you can be reading a book in one hand, surf the Internet with the other, and still drink your favorite morning beverage. We take advantage of this reality by listing many websites throughout this book. In every chapter there are several sidebars that refer to websites where more detailed information, animations, or videos may be downloaded or streamed to further enhance learning. Regardless of your background or training, we hope you enjoy reading our 12-chapter journey as much as we enjoyed writing it.

—Brian Taylor, AuD
Holcombe, WI

—H. Gustav Mueller, PhD
Ryder, ND

1

Essential Psychology of Hearing Loss in Adults

How country music and working with hearing-impaired adults are alike.

Patients can act in interesting ways, some of which do not seem predictable. Nearly every patient seeking your services exhibits some of the qualities outlined in this chapter. In order to provide the best care and service, it is critical for you to understand, from patients' perspectives, why they are acting in such a way. This chapter will help you do this. Once you have read it, you will be more familiar with some of the behaviors associated with acquired hearing loss in adults. You also will have a better understanding of why hearing-impaired people have many of these behaviors and personality traits. We also hope that this discussion will help you develop insight as to how you can interact with your patients in an understanding and upbeat manner—and of course, when you do, your hearing aid fittings will go more smoothly.

The Honky-Tonk Message

Many of you have probably been in Nashville, and if you're like us, it's hard not to stop by Tootsies, one of the most iconic honky-tonks in the United States. As you walk in the front door of this narrow watering hole, the band will be a few feet away from you to the right, belting out a famous country song. Most all country and western ballads have a message, and here's a line from one of our favorites:

> *What drives you insane about me is the very thing keeping me from losing my mind.*

This phrase, taken from the perspective of a hearing care professional, simply means that our adult hearing-impaired patients sometimes have behaviors that are hard for us to understand. These oftentimes challenging behaviors and personality traits, when put in the context of a lifelong hearing impairment, are normal. The good news is that you don't have to own a guitar, carry a tune, or even appreciate country and western music to understand the attitudes and behaviors of the typical hearing-impaired adult.

For the person who experiences hearing difficulties, hearing loss is

usually just the beginning of a series of social obstacles. In most cases, hearing loss is a communication disorder of gradual onset. This means that the hearing loss occurs slowly over many years. Typically, the hearing loss comes on so slowly that the individual is not even aware of the change as it occurs. In fact, there are some data to suggest that it takes average persons with hearing loss 7 to 10 years after they first notice the problem to come to an office for a hearing test. Unlike many other health problems, hearing loss is often very gradual, is not physically noticeable, and does not hurt. Usually, it is a workplace associate, spouse, friend, or other loved one who notices the hearing loss first. All of us know someone who has trouble with hearing conversations, especially when background noise is present. Many times we notice that the person is having difficulties before the person even admits to a problem. As you will learn later in this chapter, this is completely normal behavior.

Developing a relationship with your hearing-impaired patient ultimately will increase your chance to successfully help this person do something about his communication deficit. In addition, his or her ability to adapt to using hearing aids may be enhanced as a result of your ability to diagnose the hearing loss and understand the personality traits associated with it. As a hearing care professional, you have an opportunity to have a profound and lasting influence on the patient's life that goes beyond simply fitting with hearing aids. We know that people successfully fitted with hearing aids have improved socialization, family life, and even increased income—more on all this later.

Understanding the Problem

As Willie Nelson crooned in 1978,

Maybe I didn't love you, quite as often as I could have

Maybe I didn't treat you, quite as good as I should have

Unfortunately, many individuals, especially those who work in noisy environments or participate in noisy recreational hobbies, underestimate the permanent damage done to their hearing, often until it's too late. Because it's always there, it is easy to take your keen sense of hearing for granted, even as we age. To paraphrase another (sort of) country crooner, Taylor Swift, losing your hearing gradually is death by a thousand cuts. It often happens so slowing and gradually that you don't know it hits you until it's too late. After all, you can lean in and get closer to your friend as they talk to you in a noisy bar and still follow the conversation. And, as most people know, it is not easy to communicate and function comfortably in many of today's noisy listening environments, even for people with normal hearing. Take a moment and think about the last time you were in a popular, crowded restaurant on a Saturday night. It takes a lot of concentration to follow the conversation of the person sitting next to you. It is even more difficult, sometimes impossible, to hear in these important situations when you have a hearing loss. It's no wonder people with hearing loss are withdrawn, embarrassed, or agitated about this "hidden handicap."

It is estimated that over 48 million Americans, adults as well as children, suffer some degree of hearing loss. The

most common type is referred to as sensory/neural hearing loss (predominantly cochlear etiology—more on this in Chapter 3). The encouraging fact is that people with this type of hearing loss can be helped with hearing aids. Given these facts, it might seem logical that adults with hearing loss readily seek treatment for it. Unfortunately, this is seldom the case as there is a strong stigma associated with adult hearing loss and hearing aid use. Because hearing loss is so strongly related to old age, and aging is often not a positive attribute in Western culture, the stigma can be quite powerful. This stigma has been called the "Hearing Aid Effect" and it is present among both professionals and patients of all ages and all walks of life. Studies have shown that a substantial number of hearing-impaired patients refuse to wear hearing aids—even those with the latest modern digital technology— because they believe that hearing aids appear to make them look old or handicapped. As a professional you will encounter this stigma often. Many have predicted that because of all the modern ear-worn gadgets used by young people, the stigma is going away, but we have seen little research to support this notion.

Mueller, Ricketts, and Bentler (2014) review how stigma related to hearing loss and hearing aid use can put a person at risk for identity threat. Identity threat, often referred to as stereotype threat, refers to situations in which individuals feel they might be judged negatively because of a stereotype. The threat refers to being at risk of confirming, as self-characteristic, a negative stereotype about one's group. Identity threat can lead to self-handicapping strategies and a reduced sense of belonging to the stereotyped domain, or their value of the domain in question.

Studies in this area often have been focused toward minority or gender issues, but identity threat is also something that needs to be considered with hearing aid candidates. For example, consider that hearing aid use rate is over 60% for individuals with moderate hearing loss who are over 75 years of age, but the hearing aid use rate is only 20% for the very same hearing loss group in the 55 to 64 age range. It is reasonable to assume that the use of hearing aids is an identity threat to the younger group.

Gagné, Southhall, and Jennings (2009) provide a set of guidelines to help us counsel the patient with identity threat:

1. Describe and discuss the stigma-induced identity threat, and explain to the patient the cause, consequences and potential costs of the stress related to identify threat.
2. Establish a hierarchy of situations in which identity threat occurs.
3. Discuss the effectiveness of the patient's typical coping strategies. Introduce new adaptive strategies when necessary.
4. Implement a problem-solving approach to address a situation of stigma-inducing identity threat identified by the patient.
5. Train and encourage the patient to apply the selected coping strategies in a secure environment (may be practiced during the counseling session).
6. Meet with the patient to discuss the process of implementing and the consequences of applying the strategies discussed.

7. Attempt a similar experience in a slightly more threatening situation.
8. Increase the number of situations in which the patient discloses his or her hearing loss and applies appropriate coping strategies.

When you are interested in learning more about the detrimental effects of acquired, untreated hearing loss and the stigma commonly associated with it, check out this website: https://www.hearing.org

Audiologic Variables

There are some common ways to categorize the adult hearing-impaired population. Knowing something about these classifications will help you appreciate some of the differences in behavior you may observe. It stands to reason that the more you know about these variables, and some of their associated behaviors, the more you will understand the behavior of your patients.

Late Versus Early Onset

Hearing loss can occur before or during the development of language, or after language has already developed. The dividing line between hearing loss of late and early onset is adolescence. Adults who have early onset hearing loss usually have come to incorporate the hearing loss into their personalities. Because the loss occurred at a younger age, the hearing loss becomes part of their identity. As a result, they have developed ways to cope with and manage hearing loss in their daily lives. The situation can be very different for adults who acquire hearing loss later in life. These individuals have developed a personality that does not include coping with a hearing loss. They have jobs, families, and hobbies that have nothing to do with dealing with a hearing loss. When a hearing loss does occur, it is therefore normal for it to be a disorienting, even traumatic, experience. Nearly all the patients that you will see fall into this latter group.

Gradual Versus Rapid Onset

Most of the patients that you will see will have a hearing loss that developed gradually over many years. Hearing loss that occurs rapidly due to an underlying medical condition, however, is considered the most psychologically disorienting. Rapid onset typically means that a person experiences a sudden change in hearing within a few weeks, or even within a few hours. They may go to bed with normal hearing and wake up with a significant hearing loss—normally referred to as a "sudden" hearing loss. It is not unusual for adults experiencing a hearing loss of rapid onset to be in a "near panic" mode. Of course, your primary responsibility with all patients, but particularly those presenting to you with a hearing loss of rapid onset, is to refer them to a physician, preferably an otolaryngologist (ENT) for a complete medical examination, prior to discussing any treatment options related to hearing aids. Many otolaryngologists have drug treatment protocols that

need to be started immediately when a sudden hearing loss occurs. Hence, if you do encounter a patient who suffered a sudden hearing loss in the last day or two, strongly encourage her or him to see a physician immediately. Or, if you have a connection with an ENT office, call the office yourself to arrange a walk-in appointment for the patient.

Common Behaviors Associated with Hearing Loss

It was Hank Williams who penned the line, "I bowed my head in grief and shame as I felt the teardrops start, but as the organ played, we stood there and prayed, just me and my broken heart."

You certainly don't have to be a down-on-your-luck songwriter to appreciate the fact that the grieving process can be a difficult ordeal for many patients with acquired hearing loss.

It is a commonly held belief that adults with acquired hearing loss of late onset go through Kübler-Ross's five stages of grief: denial, anger, bargaining, depression, and acceptance (Table 1–1). As a professional, you need to try to gain an understanding of which stage each patient falls into when he or she seeks your services. It is always a good idea to involve family members and other significant others as you guide patients through these five stages. When it comes to understanding the psychology of hearing loss, your main task is to be a tolerant and nonjudgmental listener, helping patients to each adjust on their own terms to their acquired hearing loss.

Denial and anger are easy to observe in many patients ("I can hear just fine,

Table 1–1. The Elisabeth Kübler-Ross Five Psychological Stages of Grieving, Applied to Hearing Loss

Stage	What the Patient Might Say
Denial	"I don't have a hearing problem; other people mumble. I hear everything I need to hear."
Anger	To their friends: "Are you purposely talking behind my back?" To the professional: "Are you sure you did the testing correctly?"
Bargaining	"Okay, maybe I just wasn't listening, I'll pay more attention." "Let's see if I'm still having problems next year."
Depression	"Maybe my family avoids me because of my hearing loss." "There are things I'll probably never hear again." "I'm getting old."
Acceptance	"My quality of life will probably improve with the use of hearing aids." "A lot of people my age have worse health problems than hearing loss."

my husband mumbles"). Bargaining frequently takes the form of comparing or devaluing ("Who cares that I can't hear?" "I can't hear, but at least I still have my health"). Depression can manifest itself in sudden changes of behavior. Finally, acceptance takes many forms, but it could simply mean that the patient is more accepting of your recommendations, is wearing hearing aids more often, or has positive comments concerning hearing aid use. Although most hearing care professionals do not need to be experts on psychological issues surrounding hearing loss, some insights into how the five stages of grieving manifest themselves in daily practice will help you do a better job and make the task of working with some of these issues less stressful.

All of us would like to think of ourselves as leading healthy and productive lifestyles. Our self-esteem is strongly related to our health and general well-being. For example, when people first become aware that they are missing out on conversation, it is normal behavior to deny there is a problem. Acquiring a hearing loss goes against our perception of reality. It is not part of our own self-image to have a deficit like this. Think about how you felt the last time you were at a noisy social gathering and someone told a funny story, and you missed the punch line. Did you pretend you heard what was said and laugh like everyone else? Or, did you ask the person to repeat the part you missed? Most people just laugh and go along with the group, not wanting to draw attention to themselves, but probably consider it a somewhat uncomfortable situation. Now, think about the hearing-impaired person having to go through this many times a day. Imagine how that person must feel. It's no wonder hearing loss is associated with emotions like embarrassment, frustration, and even anger.

TAKE FIVE: Hands-On Exercise

Find out what it is like to have a hearing impairment. For an entire day wear earplugs. Go about your daily routine and make a record of your reactions and emotions surrounding your temporary hearing loss. The next time you encounter a hearing-impaired person acting in a negative way, think about what it is like to live with a hearing loss every minute of the day. In a hundred words or so, on a separate sheet of paper, write about your experiences with a temporary hearing loss.

It's easy to generalize and say that all hearing-impaired individuals have similar personality traits. This assumption is certainly false; however, given the nature of their impairment, there are some commonalties among the adult hearing-aid population that are worthy of further discussion. Let's examine four common characteristics associated with adult hearing loss of gradual onset, and how you—the professional—may assist the individual in overcoming these negative self images. Not every hearing-impaired person exhibits all of these traits, but if you have a busy practice, chances are good that you will observe at least some of these on a daily basis. As we said earlier, country music and working with

adults with hearing loss have some similarities. For each of the four characteristics discussed below we draw from the rich lyrical tradition of country music to illustrate our point.

Denial

This ole boy stood up in the aisle
Said he'd been living a life of denial
And he cried as he talked about wasted years
I couldn't believe what I heard.

—Kenny Chesney

When something bad happens to us, it is normal behavior to deny the problem exists. Denial has an important function: It allows us to recover from the shock of a painful or negative experience. For people experiencing hearing loss for the first time, or being told by a professional that they have a hearing loss for the first time, it is easy to simply ignore the problem. Fortunately, most patients do not strongly deny their hearing loss, as in many cases the reason they are seeing you is because they suspected that all might not be well. They usually will acknowledge the existence of the problem, but the other behaviors stemming from the initial denial can cause a great deal of emotional pain and stress. Simply stated, ignoring the hearing loss often leads to some of the other behaviors we'll talk about shortly.

Probably the single most common response that hearing care professionals hear from their patients, once the presence of hearing loss is explained, is this emphatic question: "Is my hearing loss bad enough that I need hearing aids?" This question might show that the patient recognizes the presence of hearing loss but is trying to find a reason not to do anything about it. One of your greatest professional challenges will be to recognize when someone is in denial and not ready to acknowledge the hearing impairment. No amount of convincing, cajoling, or explaining will make the hearing-impaired patient solve the problem. Allowing a patient to accept his or her hearing loss and take the necessary steps to fix the problem is a skill that takes time and effort to develop. It must happen on the patients' timelines, not ours.

Withdrawal and Avoidance

Please, say it's not too late,
So I can stop while there's still time,
An' avoid me some small bit of ache.

—Dwight Yoakam

The easiest way to deal with the psychological hurt of hearing loss is simply not to expose ourselves to situations in which we continue to be vulnerable. The hearing-impaired person, therefore, might begin to withdraw from society, even situations that previously may have been the focal point of his social interaction. For example, an individual who has been an active, participating lodge or club member may find it increasingly difficult to communicate at meetings. It is common for people with hearing loss to gradually begin to attend meetings and social events less frequently, eventually not at all.

As you begin your case history with a patient, note that there generally is a direct correlation between the length of time the individual has withdrawn

from social situations and the length of time the person has noticed a hearing loss. Unfortunately, hearing-impaired individuals do not always associate this withdrawal with their hearing problem, but often with other external influences. These individuals may even develop a false sense of wanting to be alone.

As the hearing-impaired person becomes more and more withdrawn from the world around him, he begins to avoid situations he once enjoyed. Unable to hear and being isolated is a terribly lonely way to live and, as recent research has shown, is associated with the trajectory of cognitive decline and dementia, which only adds to the downward spiral. The longer people with hearing loss avoid seeking professional help, the more they become entrenched with a hearing loss that rules their life. Once people who have lived with hearing loss for many years finally make the choice to seek help from you, it is common for them to show feelings of anger and hostility.

Hostility and Anger

I'm not preachin' I'm just talkin' but
I believe in what I say

That look of anger that you keep flashin'
won't accomplish you anything today

—Johnny Cash

TIPS and TRICKS: Case Study

Mrs. Johnson, age 85, has just ordered a pair of $6,000 hearing aids. She was brought to the office by a family member. You are told by the family that Mrs. Johnson is in the early stages of Alzheimer disease. Although she seems a little quiet, Mrs. Johnson is a very nice lady.

After a complete evaluation, it has been determined that she is a good candidate for hearing aids. Mrs. Johnson easily agrees with your recommendations and orders a pair of hearing aids for a total cost of $6,000. The hearing aids are very appropriate for her hearing loss and listening needs. A few days later, you get a call from Mrs. Johnson's daughter, who tells you Mrs. Johnson has lost all the information you have given her, including the bill of sale/contract for the hearing aids. The family is upset because Mrs. Johnson already has an older pair of hearing aids, and wants to know why she needs new ones. The family wants to cancel the order, even though they admit Mrs. Johnson doesn't use her old hearing aids, and maybe does need new ones. After you have patiently explained the results and agreed to send them a report, the family reschedules an appointment for a hearing aid fitting in two weeks.

The very next day, Mrs. Johnson shows up with her daughter unannounced in the office demanding to be seen that very day for hearing aids. The office manager tries to schedule an appointment with you, but you are busy. The patient gets even more angry and decides to cancel her order for the second time.

What common behaviors associated with acquired hearing loss are being exhibited in this case study? What, if anything, could you do differently to prevent this from occurring?